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Engineering

JAN 22 1919

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Biennial Report
State Engineer of Wyoming
1894

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SECOND BIENNIAL REPORT

—OF THE—

STATE ENGINEER

—TO THE—

GOVERNOR OF WYOMING.

1893 and 1894.

CHEYENNE, WYO.:
THE S. A. BRISTOL COMPANY, PRINTERS AND BOOKBINDERS.
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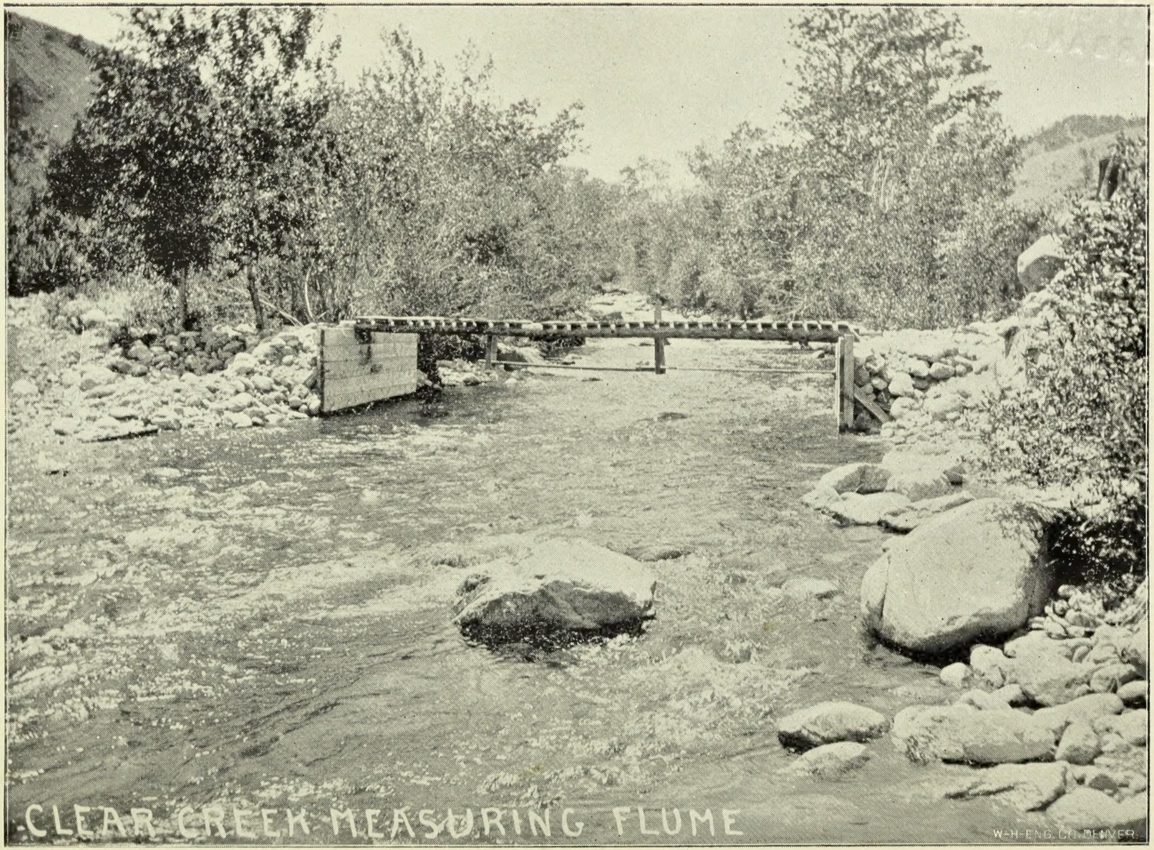
CLEAR CREEK MEASURING FLUME
W-H-ENG. CO. DENVER.

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CHEYENNE, NOV. 30TH, 1894.

TO THE HONORABLE
JOHN E. OSBORNE,
GOVERNOR.

SIR:

As provided for in Section 12, Chapter 8, Laws of 1890-91 I have the honor to submit a report of the work of this office during the past two years, with such recommendations as experience has led me to believe will increase the efficiency of the water laws and promote the growth of the interests connected therewith.

Yours very respectfully,
ELWOOD MEAD,
State Engineer.

835628

LIST OF OFFICERS

IN CHARGE OF

PUBLIC WATERS IN WYOMING.

STATE BOARD OF CONTROL.

Elwood Mead, State Engineer, President	Cheyenne
J. A. Johnston, Sec'y and Supt. Water Div. No. 1	Cheyenne
Jack Dow, Superintendent Water Div. No. 2	Big Horn
N. H. Brown, Superintendent Water Div. No. 3	Lander
A. D. Chamberlain, Superintendent Water Div. No. 4	Evanston

WATER DIVISION NO. 1.

J. A. Johnston, Superintendent	Cheyenne
W. D. Pease, Commissioner District No. 1	Cheyenne
Geo. W. Snow, Commissioner District No. 2	Little Bear
J. L. Jordan, Commissioner District No. 3	Iron Mountain
Robt. W. Burkhardt, Commissioner District No. 4	Laramie
C. H. Jones, Commissioner District No. 5	Laramie
William Brauer, Commissioner District No. 6	Saratoga
David F. Crout, Commissioner District No. 7	Collins
J. M. Calvert, Commissioner District No. 8	Dixon
Fred E. Place, Commissioner District No. 11	Freeland

WATER DIVISION NO. 2.

Jack Dow, Superintendent	Big Horn
P. S. Donegan, Commissioner District No. 1	Newcastle

David Rinker, Commissioner District No. 2	Mayoworth
W. W. Margaridge, Commissioner District No. 3	Buffalo
E. T. Chilcott, Commissioner District No. 4	Sheridan
William Curtis, Commissioner District No. 5	

WATER DIVISION NO. 3.

N. H. Brown, Superintendent	Lander
Abraham Fosher, Commissioner District No. 1	Lander
J. N. Meyer, Commissioner District No. 2	Lander
Chas. K. Walsh, Commissioner District No. 3	

WATER DIVISION NO. 4.

A. D. Chamberlain, Superintendent	Evanston
Charles Rathburn, Commissioner District No. 1	Fontenelle

ASSISTANTS TO STATE ENGINEER.

M. C. McFarlane in 1893 and 1894.

Frank Bond, Clarence Johnston in 1894.

BOUNDARIES OF WATER DISTRICTS.

WATER DIVISION NO. 1.

WATER DISTRICT NO. 1.

Includes Lodge Pole Creek, Crow Creek, Lone Tree Creek, Dale Creek and tributaries.

WATER DISTRICT NO. 2.

Horse Creek and tributaries.

WATER DISTRICT NO. 3.

Chugwater Creek and tributaries.

WATER DISTRICT NO. 4.

Laramie River and tributaries, with the exception of Chugwater Creek and Little Laramie River.

WATER DISTRICT NO. 5.

Little Laramie River and tributaries and all streams between Little Laramie River and Rock Creek.

WATER DISTRICT NO. 6.

All tributaries on the east side of North Platte River south of the mouth of Medicine Bow River.

WATER DISTRICT NO. 7.

All tributaries on the west side of North Platte River south of the mouth of Medicine Bow River.

WATER DISTRICT NO. 8.

Snake River and tributaries.

WATER DISTRICT NO. 9.

Separation Creek and all streams and springs in Water Division No. 1, north of Water District No. 8, south of Water District No. 10 and west of the North Platte River.

WATER DISTRICT NO. 10.

Sweetwater River and tributaries.

WATER DISTRICT NO. 11.

Tributaries of the North Platte River east of the mouth of Sweetwater River and west of Box Elder Creek, a tributary of the North Platte River.

WATER DISTRICT NO. 12.

Medicine Bow River and tributaries.

WATER DISTRICT NO. 13.

All the tributaries of the North Platte River, except the Laramie River, east of and including Box Elder Creek.

WATER DIVISION NO. 2.

WATER DISTRICT NO. 1.

Cheyenne River and tributaries.

WATER DISTRICT NO. 2.

Powder River and tributaries with the exception of Clear Creek.

WATER DISTRICT NO. 3.

Clear Creek and tributaries.

WATER DISTRICT NO. 4.

Big and Little Goose Creeks and tributaries.

WATER DISTRICT NO. 5.

Tongue River and tributaries with the exception of Goose Creek.

WATER DISTRICT NO. 6.

East and West Pass Creek, Twin Creek and tributaries.

WATER DIVISION NO. 3.

WATER DISTRICT NO. 1.

Beaver Creek and tributaries, Little Popo Agie River and tributaries.

WATER DISTRICT NO. 2.

Main and North Fork of Popo Agie River and tributaries.

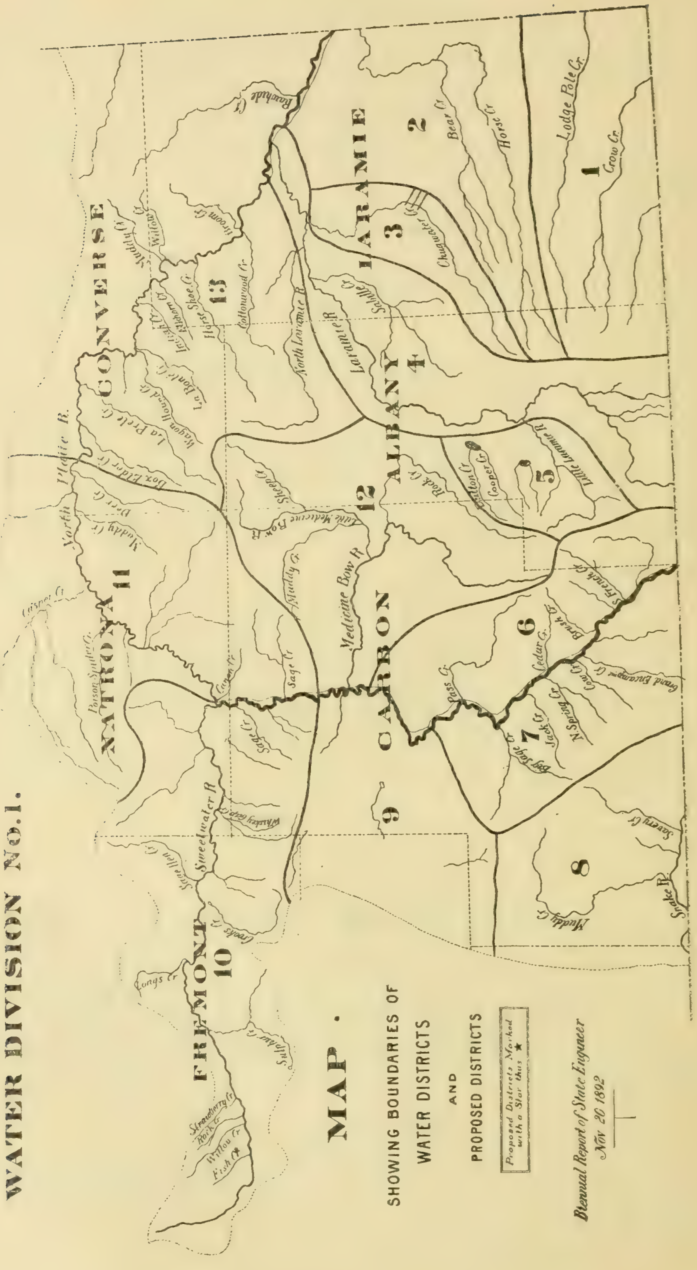
NOTE—All the remaining districts in Water Divison No. 3 are proposed districts, no adjudication having been had of their waters. For boundaries of these proposed districts see map.

WATER DIVISION NO. 4.

All districts in Water Division No. 4, except Water District No. 5, are proposed districts. For boundaries of proposed districts see map.

WATER DISTRICT NO. 5.

La Barge Creek, Fontenelle Creek and Slate Creek and tributaries.

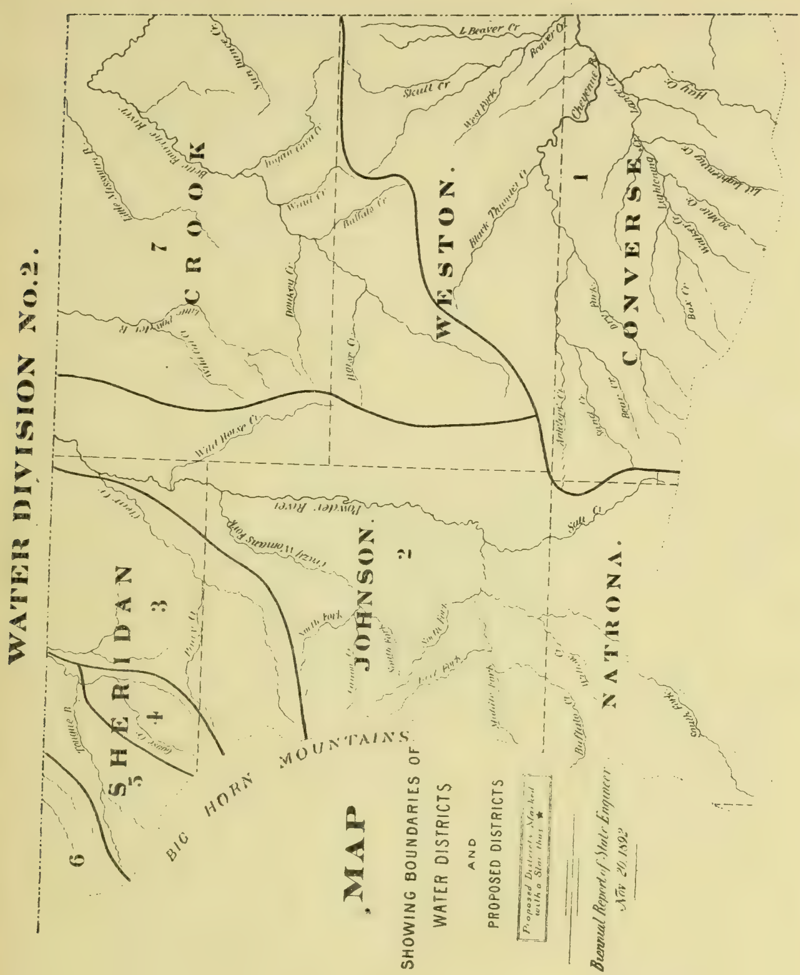


WATER DIVISION No. 1.

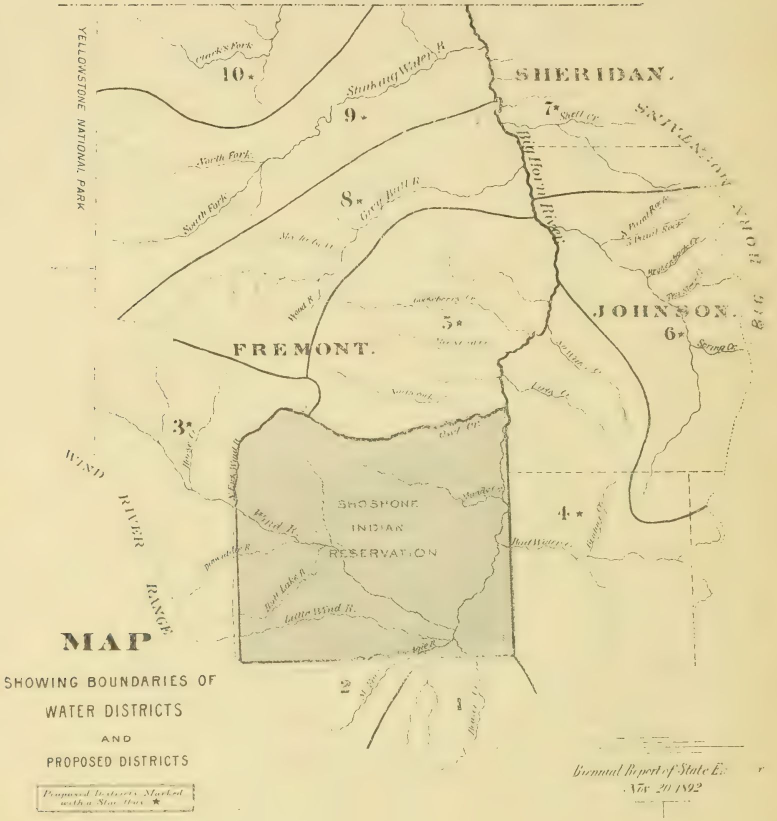
MAP SHOWING BOUNDARIES OF WATER DISTRICTS AND PROPOSED DISTRICTS

Proposed Districts Marked with a Star thus ★

Biennial Report of State Engineer Nov 20 1892


WATER DIVISION NO. 2.
MAP
SHOWING BOUNDARIES OF
WATER DISTRICTS
AND
PROPOSED DISTRICTS
Proposed Districts Marked with a Star thus ★
Biennial Report of State Engineer
Nov 20, 1892
CROOK
7
WESTON.
CONVERSE.
1
JOHNSON.
2
SHERIDAN
3
4
5
6
NATRONA.
BIG HORN MOUNTAINS.
L. Beaver Cr
Beaver Cr
Skull Cr
West Fork
Cheyenne R
Lance Cr
Hay Cr.
Lit Lightning Cr
20 Mile Cr.
Walker Cr
Lightning
Box Cr
Black Thunder Cr
Buffalo Cr
Wind Cr
Donkey Cr.
House Cr
Belle Fourche River
Little Missouri R.
Sun Dance Cr.
Inyan Kara Cr.
Little Powder R.
Wild Horse Cr.
Powder River
Crazy Woman Fork
Clear Cr.
Piney Cr.
Goose Cr.
Tongue R.
South Fork
North Fork
Middle Fork
Salt Cr.
Sand Cr.
Bear Cr.
Antelope Cr.
Dry Fork
Buffalo Cr.
South Fork

WATER DIVISION No. 3.

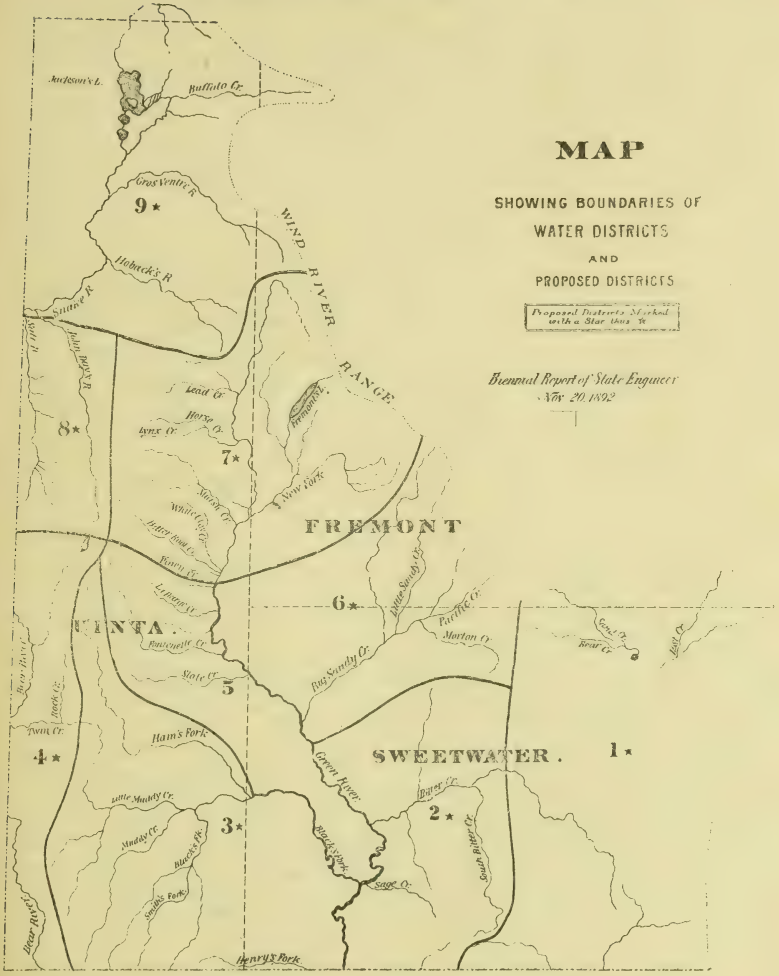


MAP

SHOWING BOUNDARIES OF
WATER DISTRICTS
AND
PROPOSED DISTRICTS

Biennial Report of State E[illegible]r
Nov 20 1892

WATER DIVISION No. 4.



INTRODUCTION.

Determination of Rights to Water. Table of Streams on which Rights have been Established. Extract from Kinney on Irrigation Law. Extension of Cultivated Area. Upper Platte Valley. Salt River. Wheatland. Northern Wyoming. Some Needed Legislation.

The passage of the State Irrigation Law was, in one respect, a new departure. It made the management of the public water a separate and distinct feature of the State Government. Because of this, and because of the large responsibilities placed upon the members of the State Board of Control, the law has attracted wide and increasing notice. As the need of more effective supervision of streams becomes manifest and a stable determination of rights to water more apparent, the other arid States have watched with growing interest the results in the Commonwealth which has gone farthest in providing for its fulfillment.

The Territorial Water Laws of Wyoming were largely a copy of those of Colorado. In its earlier steps it was makeshift legislation. In order to avoid creating offices, the work of recording, determining and protecting rights to water was divided among have a dozen State and County officers. Parties wishing to establish a right to use water had to run the gauntlet of the County Clerk, the District Clerk, the County Surveyor, and after him the Territorial Engineer and the District Judge before a division of water and protection of rights were possible. In such a multitude of counsels there was of necessity confusion, uncertainty and increased expense to the user of water.

With Statehood came the admission by Federal authority of State ownership of public waters and the creation of a recognized central authority in their supervision. Under the constitutional provision, creating the State Board of Control, every step in the diverson and use of water is under the supervision, protection and control of the State. The law has been in force four years and is no longer an experiment. So far as this State is concerned its success and the wisdom of its enactment have been fully established. The influence of its success is not confined to State lines. It has, in connection with the need recognized before, aided the effort in other arid States for securing a central State administration of the public waters which will, undoubtedly, soon be a feature of the water laws of each arid Commonwealth.

REVIEW OF PROGRESS DURING THE PAST FOUR YEARS.

When the law went into effect there were only six streams in the State on which prior appropriators could secure protection. The State had been divided into water districts and Commissioners had been appointed in most of them, but, until there had been a judicial determination of priorities, they had no right to act, and such determination had been had on only six streams. Few users of water understood the necessity for the judicial determination of rights, although this requirement was incorporated in the first general irrigation law enacted by the Territory, and its necessity is apparent to all who consider the matter. But the division of authority among so many offices had led many to believe that the first steps in themselves constituted a complete title to water. When, therefore, a Water Commissioner refused to act in protecting the rights of those who claimed a priority of appropriation, such failure was regarded as both an evidence of the weakness of the law and the incapacity of the official. The ill feeling which this engendered was aggravated by the successive changes in the Territorial laws which had created successive needs for fees and charges in recording the claims of appropriators.

The conditions which confronted the framers of the State law and the Board of Control in its administration can be summarized as follows: The cost of the preliminary statements of appropriator and the changes therein had created an antagonism against all water laws. Appropriators were disposed to regard the water law which set aside all former laws as another attempt to secure fees from them. They were not disposed, therefore, to give it an impartial trial, but to rely upon the protection afforded by the Territiorial laws.

It was manifest, however, that the controversies already existing must be settled and that some determination should be made of the 2,500 recorded but unadjudicated rights in order that neighborhood conflicts be averted and a new impulse given to agricultural development.

To do this it was necessary that the determination of rights be attended with little cost to appropriators; that the procedure be as simple as possible; that there be a definite basis on which the amount and priority of a water right should rest. To simplify the taking of testimony the Board of Control adopted as far as possible the methods pursued in the United States Land Offices. A blank form for proof of appropriation was prepared and mailed to each as a guide to claimants in advance of the hearing, the analogy between the statement of claim to water and the final proof of its use and the original entry of land and final proof of reclamation being of service in familiarizing appropriators with the new plan of taking testimony. This form of proof was not intended to prevent the introduction of other evidence but, with the exception of contested cases, it has served as an ample and satisfactory statement of the rights of fully ninety per cent.

of the appropriators. The saving to appropriators and to the Board by this method of preparing proof, and indicating to appropriators the essential facts to be established, can scarcely be understood by those not familiar with the diversity of views which existed before it was adopted, but some idea may be had from the experience of the Board with proof taken without such guide. The first testimony examined was so taken. There were only five appropriators and the maximum discharge of the stream was less than twenty cubic feet per second, yet the written proof submitted filled nearly 1,000 pages of legal cap. Four-fifths of this was immaterial and only served to waste the time of the appropriators in preparing it and the Board in its examination. To have continued this plan would have delayed the final settlement of water rights in this state for ten years at least.

Since January 1st, 1891, the Board has taken the testimony, determined the priorities and amounts of 1,490 different appropriations and issued certificates to the owners thereof. Five hundred and forty-six of these have been issued since March 1st, 1893. These certificates describe 255,121.96 acres of irrigated land, or more than the area stated in the 11th census as being irrigated in this State. The total volume of water appropriated is 3,791.61 cubic feet per second, of which more than ninety per cent. was for irrigation; the remainder being for domestic uses, watering of stock and for power. The map facing page 20 shows the location of streams on which the rights to water have been determined. They embrace nearly all of the irrigated area of Johnson, Sheridan, Crook and Weston Counties, the greater portion in Laramie and Carbon Counties and the leading agricultural district in Fremont County. The table which follows shows the streams on which priorities have been determined since the preparation of the report of 1892:

SUMMARY

—OF—

CERTIFICATES OF APPROPRIATION

ISSUED BY THE

STATE BOARD OF CONTROL

Between Nov. 1st, 1892 and Sept. 1st, 1894.

Name of Stream.	No. of Water Division	Total No. of Appropriators.	Total Volume Appropriated, Cu. Ft. Per Sec.	Acres Irrigated.
Elk Horn Creek	1	12	32 73	2,290
Cabin Creek	1	1	9 14	640
Dobbins Springs	1	1	1 00	70
Loomis Creek	1	1	57	40
Dry Muddy Creek	1	2	3 75	960
Squaw Creek	1	2	2 56	180
Garden Creek	1	8	46 25	3,240
Snake River	1	32	61 63	4,370
Savery Creek	1	31	53 00	3,708
Muddy Creek	1	33	77 65	5,423
Muddy Creek	1	5	13 28	920
Battle Creek	1	4	1 42	95
Pine Tree Creek	1	2	86	60
Horse Shoe Creek	1	32	61 02	4,074
Beaver Creek	3	8	19 36	1,300
North Fork Popo Agie	3	46	94 16	4,219 5
Columbus Creek	2	1	1 80	122
South Beaver Creek	2	4	1 66	92
Pass Creek	1	2	14 85	1,040
Hecht Creek	1	1	2 14	150
East Fork Muddy Creek	1	1	57	40
Little Laramie River	1	1	2 00	140
Beaver Creek	1	1	4 14	290
Spring	1	1	70	50
South Spring Creek	1	1	1 14	80
Sage Creek	1	2	1 91	132
Pass Creek	2	3	2 55	178
Twin Creek	2	2	2 285	160

CERTIFICATES OF APPROPRIATION, *Continued.*

Name of Stream.	No. of Water Division.	Total No. of Appropriators.	Total Volume Appropriated, Cu. Ft. Per Sec.	Acres Irrigated.
Big Goose Creek	2	13	25 36	1,775
Squaw Creek	3	11	5 47	299 5
Separation Creek	1	8	10 79	730
Big Popo Agie River	3	98	118 91	5,081 16
Twin Creek	3	13	6 52	376 5
Willow Creek	3	12	5 87	349 25
Red Canon Creek	3	3	38	22 75
Deep Creek	3	2	54	38
Barrett Creek	3	7	36	25
Crooked Creek	3	1	2 86	200
Hornecker Creek	3	14	5 52	363 5
Little Popo Agie River	3	30	30 73	1,934 6
Commissary Springs	3	1	45	17
Baldwin Creek	3	1	2 30	160
North Fork Popo Agie River	3	1	66	40
Spring or Alkali Creek	1	2	2 66	186
Rawhide Creek	1	12	37 11	2,596
Popo Agie River	3	1	10	3 5
Hat Creek	2	2	7 92	565
Little Laramie River	1	3	13 42	840
Redwater Creek	2	13	32 42	794
Hunyadi Mineral Springs	2	1	5 00	350
Oil Creek	2	2	5 00	350
Niobrara Creek	2	19	28 01	1,593 5
Muddy Creek	1	12	10 24	718 1
Belle Fourche River	2	27	29 87	1,974
		543	902 56	53,745 86

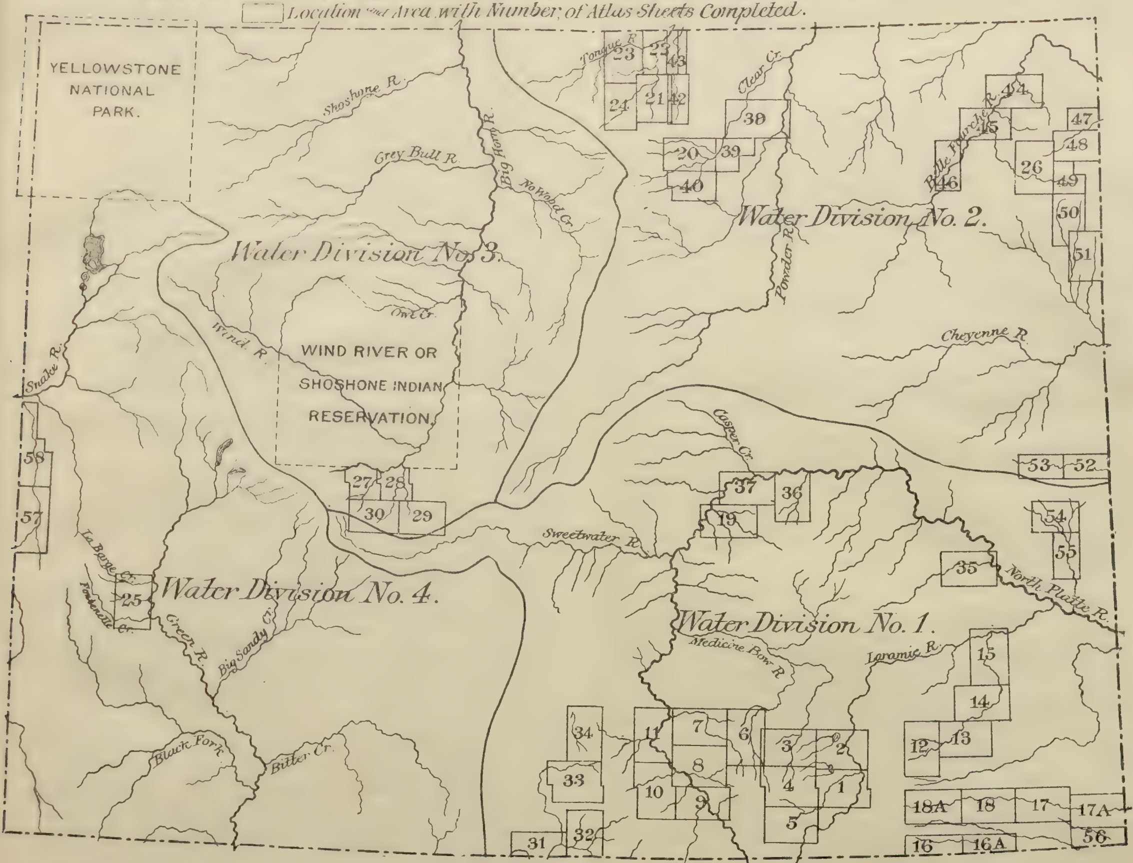
In addition to the work embraced in the above table the surveys by the State Engineer have been made of the ditches diverting water from Clear Creek and tributaries in Johnson County, Prairie Dog Creek in Sheridan County, and Salt River and its tributaries in Uinta County. On these streams the greater part of the testimony has been taken, but the adjudications are not as yet completed. On Clear Creek a number of contests have been instituted which have delayed the submission of proof taken to the Board of Control. On Salt River and its tributaries the taking of testimony is now going on. By the beginning of next year fully two-thirds of the unadjudicated claims which confronted the Board at the time of its organization, will have been disposed of.

In connection with this brief review of the adjudication of rights by the Board is a criticism of the structure of the law which is worthy of insertion. It is taken from Kinney on Irrigation Law, the most exhaustive discussion of this subject yet attempted in this country.

KINNEY ON IRRIGATION—PARAGRAPHS 492 AND 493.

"492. Statute of 'State Control' and 'District Law' Compared—This law providing for the State control and use of the waters of the State of Wyoming is the most elaborate and effective statute of this class of any of the States or Territories of the arid region. In contrast to the district law of California, as adapted to the thickly settled States, the present law of Wyoming may be considered the best and most effective law upon the subject of water-rights governing the sparsely settled portions of the arid west. Although we regard the 'District Law' as the true economic principle in the control and application of water for irrigation, we do not think that the condition of the sparsely settled States like Wyoming is ready for such a law. In California, when the district law was adopted, the conditions in many parts of the State where the districts were actually organized were such as to make the handling of waters for irrigation almost as clearly a matter for municipal control as the handling of water for domestic use in cities, or the paving of

MAP SHOWING PORTIONS OF STATE WHERE DITCHES HAVE BEEN SURVEYED BY STATE ENGINEER.



streets or the laying of sidewalks. Of what utility is the district law in the sparsely settled sections of the country where the solitude is yet to be broken by the sounds of civilization, and where money and labor must first perform great tasks before there can be a population sufficient to vote bonds or fill the offices of the district; and where all the natural conditions of the country are entirely different from those in California, where the 'Wright Law' has been so successful?

"493.—This last legislation gives a final and speedy solution of many of the troubles that, before its passage, beset the irrigator in the State of Wyoming, and its practical operations are being watched by the people throughout the arid region, as it seems to promise so much to them. In preparing this law advantage was taken of the experience of other States, and much that is best has been incorporated from the laws of other irrigating countries. The law is unique in this, that the State does not necessarily wait for controversies and losses to arise, but of its own motion steps in and ascertains how much water is available for irrigation, who are the claimants to this water, and then, knowing these fundamental facts, gives the use of the water to the proper persons, employs its own agents to see that the distribution is made. In Wyoming, at least, there will no longer be the ludicrous spectacle of learned judges solemnly decreeing the right to from two to ten times the amount of water flowing in the stream, or, in fact, amounts so great that the channel of the stream could not possibly carry them, thus leaving the questions at stake as unsettled as before.

"From a study of the law it is very apparent that the State Engineer and Board of Control hold the most important offices in that State so far as its agricultural interests are concerned, and, by a wise and skillful exercise of the functions intrusted to them, can bring about great changes for the better in the development of the agricultural resources of the State. The State Engineer is President of the Board of Control. Objections may be made by some that there is too great a centralization of power in one man. But this is answered by the provision for appeal to the courts by any party feeling himself aggrieved, and by the provision that when the case is finally decided the right of the prevailing party relates back to the first step taken by him to secure his water-rights. Thus his rights are not jeopardized by the delays often attendant upon court proceedings. The law provides that the priority of the claimant's rights shall be the basis for the determination of his right to the use of water. The law also provides for the adjudication of his claim, which, when made, entitles the claimant to a certificate of appropriation to water, stating the amount of water he is entitled to, the land it is intended to irrigate and the number of its priority. And now for the first time he has a deed to the water, which is even more important and valuable than the deed to his land, from the fact that his land would be absolutely worthless without the water. It will thus be seen that while five years ago Wyoming had practically no water law it stands to-day pre-eminently at the head of the list respecting irrigation legislation adopted by the various States and Territories of the arid region, as applying to the sparsely settled communities of that region. It has embodied in its law all that has been found good and efficient in the operation of the laws of other States and Territories with the exception of the 'District Law' of which California has the model."

EXTENSION OF CULTIVATED AREA.

Taken as a whole, the agricultural growth of the State during the past two years has been disappointing. The promise of rapid growth, existing when the last report of this office was written, has not been fulfilled.

No important ditches have been built in this time and the increase in irrigated acreage has not kept pace with growth in other directions. We are also open to the criticism of not making the best use of the ditches already built. There are too many of these which are empty and there is too much uncultivated or poorly cultivated land under them. The State is still drained of its revenue to purchase food supplies abroad which ought to be raised at home.

There are, however, a few localities which furnish a gratifying exception to the general stagnation which has marked the past two years.

SHERIDAN COUNTY.

Sheridan County still maintains its place as the leading agricultural county of the State, and from the active interest manifested by its citizens in extending the cultivated area it promises to maintain this position for some time to come. No important ditches have been built during the past two years. The leading feature in construction work in this section has been the location and improvement of a number of natural reservoir sites to reinforce the water supply of some of the ditches having late priorities. The completion of these storage basins will add largely to the security of farming under some of the largest and best ditches in this section and ought to result in a material increase in both the population and agricultural production of this county.

THE UPPER PLATTE VALLEY.

The largest area of cultivated land in the southern third of Wyoming is the Platte Valley, south of the Union Pacific Railway. Those who have feared that the elevation of Southern Wyoming was a barrier to success in agriculture can find much encouragement from the experience of this section. Barley grown in this valley won a medal at Chicago. Although the average elevation is nearly 7,000 feet it is the largest producer of small grain and alfalfa along the Union Pacific Railway. The growth of these products has proved of more than ordinary profit because of the local market. A higher price was paid for wheat in 1893, at the mill in Saratoga, than in the City of New York. Wheat growing is an infant industry in Southern Wyoming. Among small grain oats is king. The 189,000 pounds of wheat ground at the mill in Saratoga in 1893 was over 100 times the production reported for 1889. Another infant industry in this section is the growing of small fruit. Within the past two years the production of small fruit for the local market has passed the experimental stage and the success achieved marks it as one of the coming industries of this section.

The need of this valley is more farmers. The irrigated farms are too large. There are 43,793 acres of land having adjudicated rights to water, and a large additional area along the North Platte irrigated but not having adjudicated rights. A large percentage of this land is not being used and the owners thereof have neither time or means to cultivate it with profit. The owners of this land recognize these facts and are ready to welcome settlers and to dispose of their surplus land on favorable terms. If the land now idle or imperfectly cultivated was transferred to small farmers it would be a gain to present owners, a comfortable and prosperous home for the purchasers, and would make this one of the most populous and thriving sections of the State. The investment has been made, the work of reclamation accomplished, but the results are wanting simply for a lack of people. Enough has been done to show what can be accomplished, the times are favorable for securing settlers, and it is to be hoped that a community effort will be made to obtain them.

SALT RIVER VALLEY.

This is one of the few sections of the State which grows enough farm products to supply the local demand. The area of cultivated land on Salt River is greater than on any other single stream in the State, but as yet there has been no surplus; the growth in population and the needs of incoming emigrants having kept pace with increase in production.

This district is another object lesson in the possibilities of irrigated land at high altitudes. The elevations of this valley range from 6,000 to 6,500 feet, some of the most productive farms being at the latter elevation. From statistics of crops grown in 1894, furnished this office by Hon. Geo. Osmond, of Afton, the average yield of alfalfa was between two and one-half and three tons, of native hay over one ton, of oats 27 bushels and of barley 46 bushels per acre. While these yields will not equal those secured at lower elevations in the State, they are above the average of the entire country and are sufficient to make farming a success.

The increase during the past two years, in population and in acreage cultivated, has been greater in this valley than in any other agricultural district of the State. It has been due to two causes: The abundant water supply and the ease and cheapness with which it can be distributed. It costs no more to build ditches from these streams than to construct laterals. The reasons for this will be given at greater length in the report of the surveys of the ditches.

The other reason for rapid growth is the methods pursued in securing settlers. It is a colony enterprise. All, or nearly all, the people are Mormons. The Church has proved the most effective agency for reclaiming the arid domain ever devised. The Church affiliation has served to secure a concert of action and union of means not possible in pioneer communities composed of people who are strangers to each other and between whom no bonds of union and confidence exist.

THE WHEATLAND COLONY.

The locality most talked about, and which is destined to exercise the greatest influence on the future reclamation of this State, is popularly known as the Wheatland Colony, in Water Division No. 1, in Laramie County. This colony is settling the land and utilizing the canals of the Wyoming Development Company, the operations and fortunes of which have been referred to in each of the preceding reports of this office. Its prominence is due to the fact that it is the most expensive system of canals yet built and the most important attempt in this State to reclaim land on a large scale. It is an effort at reclaiming land for public occupancy and, in the size and cost of the canals, is a type of what must be accomplished in order to use the water of our large rivers. In this enterprise the projectors undertook to overcome the weakness of existing land laws by evading their provisions. As a canal project it has been a failure. As a colony it is a success. The land was offered to settlers last spring. About one-half is now sold and, on an average, each day witnesses the advent of another settler. There is every reason to anticipate that within a year from the time the land was thrown open to the public the entire project, embracing a canal system costing half a million dollars and fifty thousand acres of land, will have passed into the hands and under the control of resident farmers, no one of whom will own over 160 acres.

Rightly considered this enterprise is an object lesson to the people of this State. It shows the weakness of our land laws in protecting investments in canals and, at the same time, the value to the State of such investments.

A persistent effort has been made in this State to create a prejudice against large canals and to discredit any effort to secure their construction. There has been an especial tirade against any corporate investments of this sort. Corporations can own cattle or sheep to pasture on the public land and there is no adverse comment. They can secure valuable mines and are not objects of suspicion, but when it is proposed to build a canal to make land now worthless habitable, there is an immediate outcry that such enterprise means the oppression of the people and must be prevented. All this is in complete and wilful disregard of the fact that three-fourths of the land reclaimed in the arid region has been reclaimed through such agencies without any such abuses having resulted therefrom. The largest areas and best land in both Colorado and California were reclaimed by corporate enterprise. Without such aid these States would be but little in advance of Wyoming in their reclaimed area. The land reclaimed by the Wyoming Development Companp would be a sheep range to-day if the building of these canals had been left for the individual settler. If one were to believe the direful predictions, so liberally indulged in, the settlers on these lands ought to be objects of commiseration. A corporation built the canal and owned the land. There were no safeguards against extortion, such as can readily be framed. In this case they are not required. The land and canals are being transferred to settlers at less than cost. The small farmer is securing a home on terms which involve less effort on his part, less hardship and expense to himself and family than falls to the lot of nine-tenths of those who attempt to reclaim land by building individual ditches. We find this corporation, instead of hindering the efforts of the settler, the most effective of agencies for attracting him to the State. Instead of abuses there is increase of population, of taxable wealth and a doubling of agricultural production of the leading county of the State in one year.

This is not intended to justify corporate abuses nor to advocate the disregard of legislation to prevent such abuses, but it is a protest against the senseless and injurious appeals to prejudice, which have been made in this State, against corporate investment in canals.

WHAT IS INVOLVED.

If we are to make any use of our great rivers we must have the aid of outside capital in building canals to divert them. If we are to have the lands which border them occupied we must make it possible for settlers to cultivate them. Both the capital to build canals and the settlers to reclaim the land must be attracted from outside our borders. Present land laws do neither. There is no necessity for arguing this statement; the experience of this State for the past five years is conclusive. There ought to be a change; the opportunities of this State ought not longer to be neglected. Its people ought to be more mindful of the future than to sit passive and see the water of our streams secured by prior appropriators below us. In framing laws the following facts ought to be considered:

1st. There is no danger of water monopoly in this State if the present water laws are kept in force. Appropriations go, not to individuals, but to the land reclaimed and are limited in volume by the land reclaimed.

2nd. If the building of canals and the reclamation of the land is insisted upon, as a prior condition to securing title thereto, there is no danger of land monopoly for the simple but conclusive reason that land grabbing in this State, which involves reclaiming the land, has not paid in the past and will be less profitable in the future.

3rd. There is only one way in which land can be reclaimed and cultivated with profit in this State. It must be owned in small tracts by the farmer who reclaims it. The low price of farm products and the high price of labor have made and will make the ownership of large bodies of irrigable land unprofitable.

4th. The success of small farmers depends in turn upon ditches properly located, cheaply and substantially built. This can be most certainly secured through ample capital, competent engineering supervision and the use of the best appliances. It cannot be accomplished by farmers working without means, using inferior tools and without the aid of engineering experience and advice.

5th. The rapidity and cheapness of canal building will depend upon the security afforded for the money invested in their construction. There is no security whatever for money invested in canals to water public lands under present land laws. People can occupy the land without becoming users of water. Those who desire to use water can compel companies to furnish it at prices arbitrarily fixed and which may have no relation to the cost of the service. The result is, we are not building canals; if we were, there would either be a confiscation of the investment or industrious settlers would have to pay for the risks taken.

6th. The haphazard location of ditches, the diversion and use of public water through ditches built without a semblance of supervision of plans ought to cease. In permitting this we are delaying the use of our resources, preventing their best use for all time and creating conflicts which will prove a serious evil in the future.

WHAT SHOULD BE DONE.

7th. The location of ditches ought to be in accordance with a prearranged plan. The plans of all large works ought to be subject to State supervision and State approval. The price of water-rights ought to be fixed by prior contract with the State. They should be based on the cost of work, and, in justice to both settler and ditch builder, no arbitrary or extreme departure from this price should be permitted.

8th. Land to be reclaimed ought to be reserved for actual settlers and users of water. The opportunity to acquire title to such land should be conditioned on the securing of a water-right for the land. This is a measure required for the protection of both ditch builder and actual home seeker.

9th. No canal should be constructed which contemplates furnishing water for hire. Experience has shown that such canals are prolific of controversies and that water is supplied at less cost to user when the farmers below a canal own and operate it. There is a further reason for this. In this State the water appropriated goes with the land; if the canal also goes with the land it obviates the creation of carrier rights as distinct from user rights.

10th. Provisions similar to these have been incorporated in the water laws of the foremost irrigation States of the Old World. As an enlightened, self-governing State we should not longer disregard the teaching of their experience.

DONATION OF ONE MILLION ACRES.

The next State Legislature will have both the opportunity and duty of dealing with this problem. The control of one million acres carries with it great opportunities in the way of securing the more systematic diversion of our streams, the construction of larger and better canals and the rapid increase of wealth and population. Two things will be determined by this law—whether the people of the State can be trusted to supervise the reclamation of the land within our borders and whether or not the State and National authorities can work in harmony.

The Wyoming Commission to the recent Irrigation Congress made the following statement relative to this donation:

"We regard the recent legislation by Congress, donating one million acres of land to each of the arid States and imposing no condition except that it shall be actually settled and reclaimed, as a valuable aid in securing these results, and that it will open a new era of growth and prosperity to each of the arid States.

"Under the provisions of this donation, it will be possible to create communities consisting of hundreds of homes, with the same facility that the single homestead is established under the present land laws and the occupancy and development of the land occupied by these communities will be far more successfully accomplished than is the establishment of the isolated homes under the operation of either the homestead law or the desert land law. While this measure does not, in the opinion of some of our Commission, meet with all the requirements of arid land legislation, the Commission is a unit in endorsing it as a movement in the right direction, a carefully guarded measure which fully insures the transfer of the land reclaimed into the hands of settlers and small holders, a measure which does not impose conditions which will prove injurious to any of the arid States but which will enable any State, which desires to do so, to secure the means wherewith to utilize its resources.

"While the law is in a sense experimental it is an experiment in the right direction. It gives the States an opportunity to prove their fitness and capacity to control the development of their resources. If rightly improved, if the trust created is honestly and wisely administered, it should and we believe will secure the favorable recognition of Congress; while the experience gained in its execution will be of great value in determining the character of further legislation."

THE GRAZING LAND.

This law does not deal with one of the great problems of this State, the preservation of the native grasses and proper utilization of the grazing lands. The time has arrived when the land laws should recognize the existence of grazing lands. So far they have only dealt with the arable lands.

In Wyoming the utilization of the native grasses has been the basis of the leading agricultural industry. Grass is the only indigenous agricultural product of the State and it has in the past supported one-half of the taxable wealth of the State. Unless the native grasses should be destroyed, through neglect to recognize their value and provide conditions suited to their perpetuity, the grazing of cattle and sheep must always remain one of the leading industries of the State. The stability and prosperity of this industry is imperilled in two ways: The extension of irrigation shuts off the water supply for stock on the open range, by the fencing of irrigable lands along the streams. Deprived of access to water, the higher grazing lands are rendered useless. The second source of danger is lack of control of particulars areas, the lack of incentive to individual interest to preserve and protect the native grasses, which results in the range being overstocked and its consequent impairment or total destruction. The grazing lands are now an open common to which all have access alike. The tendency, therefore, is to make the greatest possible use of these lands regardless of the interests of others or of future consequences. It results in friction between farmers and stockmen and is an equal injury to both. Rest and re-seeding are required by eastern meadows where the recuperative forces are ten-fold that of our arid plains. It is a far greater requirement on lands parched by unending drouth in summer.

It is useless for the settler along the stream to seek to preserve the contiguous pastures when they are open to visitation from flocks of sheep and herds of cattle from other States, even to the remotest sections of the country.

It is useless for stockmen, utilizing the open range, to seek to preserve these ranges or make outlay for their improvement so long as access to the streams is endangered, and the water supply is so precarious, and so long as there is no restriction in the occupancy and use of the range so preserved and improved. To remedy these evils, it is suggested that changes should be made in the land laws by which the irrigable and grazing lands will be united and a homestead made to embrace a portion of both. The grazing lands have not only an important productive value in themselves but, utilized in this way, will be an efficient aid in hastening the extension of the irrigated area and enhancing the prosperity of those who occupy it. Under such a system individual interest will suffice not only for the preservation of the native grasses but will secure the greatest return and greatest possible improvement of both the irrigable and non-irrigable domain.

THE LIMITATIONS OF RIGHTS TO WATER.

Do Appropriators of Water become Owners Thereof or Only Possessors of the Right to its Use? Do Rights to Water for Irrigation Inhere in the Land or in the Individual who Applies the Water to the Land?

Shall the water of our streams become private merchandise or shall it remain the property of the public? This a fundamental problem of our irrigation system. It is of too much importance to remain longer a matter of doubt or controversy. The doctrine which is to govern ought to be definitely established, if it is not already, and be fully understood. On it must rest in a large degree the character of State administration of streams, the methods to be pursued in building and operating canals, the security of our agriculture and the value of irrigated land.

Because of its importance, and because of the conflicting interests involved in its settlement, legislators have been reluctant to pass laws defining, in specific terms, the limitations of a right to water. While, in the opinion of the writer, this State is an exception to the rule, the fact remains that among appropriators there exists a wide difference of opinion both as to the intent and meaning of the law and as to the correctness of the State Engineer's interpretation.

From its nature, it is one of the questions which the State Engineer has had constantly before him. Persons claiming absolute ownership of the water of streams have sold the same to persons willing to admit such ownership and have sought to enforce the recognition by the State of the transfer. The sales have been made in advance of the legal determination of appropriations; they have involved changes in the nature of the use from that by which ownership was claimed to have been acquired; they have contemplated changes in the means of diversion and place of use. The State Engineer has been asked to recognize as valid, sales of water which contemplated a change in an appropriation for mining purposes to use in agriculture; from an appropriation to run a mill to fill an irrigation ditch; from a diversion near the head of a stream to a proposed diversion miles below.

In each and every instance the recognition of the validity of these transfers has been denied, and the denial has been based upon the belief that no right to the water of our streams exists except the right of use; that this right is restricted not only to the use by which acquired but to the place where acquired, and that it cannot be separated therefrom; that to recognize the right to sell water is to recognize a property right in water not contemplated by the laws of this State, and that its recognition would work untold injury to the material interests of the State.

This position has been approved by the Board of Control and followed in all its decisions. While its legality has been called in question by a few appropriators there has been no authoritative decision of our courts which would either dispute or affirm its correctness, nor has there been any subsequent legislation which in any way impairs its validity. The importance of this question and the difference of opinion which exists regarding the legality of the Engineer's action makes it proper that the reasons therefor should be stated in this report.

It was based on the belief that water being one of the gifts of nature the title thereto should forever remain in the public; that such public ownership was recognized by the people of this State prior to the adoption of our State Constitution and prior to the enactment of any specific law on this subject, and that in the adoption our State Constitution such public ownership was made a part of the fundamental law of this State; that such public ownership is not only in accord with our laws but that the greatest prosperity of our citizens will be secured by maintaining the limitations above stated.

To recognize the right of an appropriator to sell water or to divorce it from the conditions by which it was secured is to make of water a speculative commodity. It is the creation of conditions under which a man can own the water of a stream and dictate to users the terms on which it can be had. It separates the ownership of water from the ownership of land and makes our agricultural growth and industrial prosperity depend upon the selfishness of the owner of the stream. These conditions are opposed to all public interests. They set aside every consideration which justifies the doctrine of appropriation.

The following extracts from the water laws and the accompanying discussion are submitted in support of the above statements:

LAW OF APPROPRIATION.

"All persons who claim, own, or hold a possessory right or title to any land or parcel of land within the boundary of Wyoming Territory, when those claims are on the bank, margin or neighborhood of any stream of water, creek, or river shall be entitled to the use of the water of said stream, creek or river for the purpose of irrigation, and making said claim available, to the full extent of the soil, for agricultural purposes." (Sec. 1317, Rev. Stat. 1887, p. 366.)

This law was passed in 1876, and was the governing law of all the earlier rights. It will be noticed that it does not say that appropriators shall become owners of the water. It does not say that an appropriator of water for irrigation shall be entitled to use the water so appropriated to run a flour mill or to reclaim land elsewhere. What it does say is that he shall be entitled to use water to reclaim the land he owns. It does not say that he shall appropriate all he may claim or all he may build a ditch to transport, but it limits it to the requirements of the soil.

The next legislation dealing with water rights was the irrigation law of 1886. So far as this law deals with appropriation it was a mischievous and dangerous piece of legislation. The language is ambiguous and contradictory. It makes canal owners, ditch owners and reservoir owners the sole appropriators. It fails utterly to provide for the establishment of rights by users of water or to protect the interests of such users. Had this law remained in force, ownership in water apart from its use or the separation of land and water could not have been denied. The separation began with the creation of the right. This law was a direct copy from the laws of another State. Its significance was not understood at the time of passage, but with a better understanding of its dangers came its swift repeal. The law of the succeeding legislature shows in its language how strong was the protest against the law of 1886.

Sec. 14, Ch. 55, Session Laws of 1888, reads as follows, a portion being in italics to show more clearly its purport:

"The priority of the right to the use of such water shall be limited and restricted to so much thereof as may be *necessarily used and appropriated* for irrigation or other beneficial purposes *irrespective of the carrying capacity of the ditch*, and all the balance of the water not so appropriated shall be allowed to run in the natural stream from which said ditch draws its supply of water and shall not be considered as having been appropriated thereby. And in case the owner or owners of such ditch, canal or reservoir shall fail to use the water therefrom for irrigation or other beneficial purposes * * * during any two successive years they shall be considered as having abandoned the same and shall forfeit all water rights, easements and privileges appurtenant thereto, and the waters formerly appropriated by them may be again appropriated for irrigation and other beneficial purposes, the same as if such ditch, canal or reservoir had never been constructed; neither shall the *owner* or *owners of any such ditch, canal or reservoir have any right to receive from others any royalty for the use of water carried thereby*, but every such owner or owners having a surplus supply of water and furnishing the same to others from any ditch, canal or reservoir as hereinafter provided shall be considered common carriers and shall be subject to the same laws that govern common carriers."

This section is still a part of our water law. In the laws of no other arid commonwealth are the limitations of an appropriation so specifically and rigidly defined. It says that there can be no appropriations except that based on use, that the right acquired shall be limited to the amount necessarily used. It says the right shall be restricted to the amount used for a specific purpose. It says the use must continue if the right continues and that a failure to use for two years works a forfeiture of right. It does not say that an appropriation for irrigation carries a right to use for mining, nor an appropriation for power a right to use such appropriation for irrigation. It does not say that a person ceasing to use the volume appropriated shall have the right to levy tribute from some other intending user which he must pay before he can secure it, but it does say that it may be again appropriated and that no such royalty shall be levied.

STATE LEGISLATION.

The State law carries the evolution of thought on the subject of water rights still further. It retains the limitations of the law of 1888, and in addition specifically attaches rights for irrigation to the land reclaimed. To secure an appropriation of water for irrigation there must be a survey of the ditches and land by the State Engineer. The appropriator must, in submitting proof, describe the land reclaimed by legal subdivisions giving the area reclaimed the first year and each subsequent year. The certificate of appropriation, the form of which is prescribed by law, describes by legal subdivisions the land to which the water is to be applied. The most difficult matter connected with the adjudication of rights is to secure a correct description of the location and area of irrigated land. The greatest item of expense of the Engineer's office is to make the surveys and maps required. If it was not the intent to have the water right inhere in the land so described, this effort and expenditure are worse than wasted. If within an hour after a Certificate of Appropriation is issued an appropriator can sell the right which it describes or transfer the water so appropriated to some other location and use, then the description of the land, required in certificates, should be abolished. If the appropriation does not attach to the land described but belongs to the individual appropriator then the certificate and the law should both state this fact and the Board of Control and seekers after grants of water be spared the labor and expense involved in the present procedure.

There is one exception to the general tenor of our water laws and it is the exception which proves the rule. Recognizing the growing and paramount needs of cities and towns for water for domestic and other uses, the framers of the Constitution made an exception in their favor by permitting in this one case the sale of rights. (See Sec. 5, Art. 13.) Properly considered this is not a sale of the water. The compensation is for the improvements rendered valueless, the property destroyed. If, however, the framers of the Constitution contemplated absolute ownership in water as the result of appropriation there would be no necessity for this Constitutional provision.

We believe these laws fully sustain the position of the Board of Control. Any other position would be a departure from the intent and spirit of the legislation on this subject and an especial violation of the State law.

COURT DECISIONS.

Those who oppose this view base their objection on the fact that the decisions of the Courts of the other arid States recognize property interest in water and the right to sell and transfer not only ownership but to change the location and nature of its use. That the doctrine of the Board of Control is opposed to the decisions of the Courts of other arid States is admitted, but this does not in any way impair its validity, because those decisions are based upon statutory enactments entirely unlike the water laws of this State. No State has defined and restricted an appropriation in as specific terms as is done in the Territorial law of 1888. No State except Wyoming requires the land for which an appropriation is made to be described by legal subdivisions. The statutes of many States recognize ownership in water, and the right to buy, sell and change the place of use is conferred by law. In many States all that is required to secure ownership of water is to post a notice on the bank of the stream claiming it and dig a ditch to divert it. The Courts of those States recognize the right of sale, but that is no reason for such recognition here nor indication that such right will be recognized in this State under entirely different laws.

THE NATURE OF VESTED RIGHTS.

In the administration of the water laws of this State much is heard of vested rights and nearly everything which tends to curtail absolute ownership in water is regarded by the earlier appropriator as a violation of such rights. The earlier appropriator having but little conception of the ultimate importance of this question, and of the conditions necessary to secure the best use of our water supply, has usually regarded an appropriation of water in much the same light as he regards acquiring title to land, and looks on nothing less than absolute ownership as adequate and proper. We have never been able to accept this view. There is no question but what absolute ownership would be more valuable to the individual securing control of the stream than the right to use the water for beneficial purposes, but we have never believed that the purpose of the State in assuming control of the water supply and protecting appropriators in its use was for the purpose of conferring a valuable property right on individuals to the exclusion of the rights of the public.

Because of this fact we have refused to recognize as valid the extravagant claims of appropriators, made in the original statements of claim to water. We have refused to recognize the validity of the claim that the capacity of the ditch determines the amount of an appropriation. In both these refusals we were met with the statement that it was a violation of vested rights not to do so. The same objection is urged against the position that an appropriation is limited to the location and use by which acquired; that appropriations for irrigation inhere in the land reclaimed and cannot be sold and transferred elsewhere.

A right to become vested must have some foundation in either statute law, the universal customs of a country, or the overwhelming necessity of its people. There is nothing in the use of water for irrigation which will justify the claim of appropriators to an absolute property right in water. The whole doctrine of appropriation grows out of the climatic conditions of our country which makes it necessary that the water of our streams should be diverted and absorbed in order to secure its material development. The return which comes from the use of this commodity to the public causes the public to make a surrender of its interests therein. The protection of the appropriator in his right to its use is due to the fact that the waters of our streams will not serve all the lands which border them. If there was an abundance of water, for all possible users, there would be no necessity for the doctrine of priority of right or any right of appropriation whatever. So long as all are supplied there is no necessity for determining who has the best right, but, whenever the supply is inadequate, it becomes necessary to determine who has the best right to its enjoyment and to protect that right in times of scarcity.

We have declared in this State that the first users have the best right and that the rights of subsequent users are to be based in their order upon the time of use. The surrender by the public to the individual of this right of use and the protection by the public of the individual in its enjoyment is a free grant from the public, the only consideration being the public benefit to be derived therefrom. So long as this protection is afforded it furnishes an adequate incentive to the outlay which may be made in the construction of ditches or in preparing land to use the water, and this is as far as the surrender by the public ought to go.

If this is true then the rights of an appropriator do not extend beyond his necessities. If he ceases to use water, or only uses a diminished part of it the surplus should be returned to the public and it should not be in his power to levy tribute on those who desire to apply such surplus to an equally beneficial use.

Those who believe that there is and should be private ownership of water use in effect the following argument to justify their views which, in this case, is an abbreviated statement found in a Court decision of another State upholding such property right:

If And B are appropriators on a stream, using the entire volume of the stream, A, being the first appropriator, finds he does not require all the water described in his appropriation, offers the same to B, but B having an adequate supply does not desire it. C, however, if he can obtain a water supply is willing to construct ditches and apply it to the reclamation of an additional area. It is argued that it will work no injury to the subsequent appropriator B for A to sell all or part of his appropriation to C; that the public will be a gainer by the sale because it will bring an increased area under cultivation; that the subsequent appropriator B is not injured, and that to deprive A of the right to sell this water would work him an injury, be an impairment of his property rights, and that consequently the doctrine of the right to sell appropriations should be sustained.

The error in this argument is the injustice towards C and the sacrifice of the rights of the public which it involves. To have the right understanding of this matter we must remember the liberality of the public to A both in granting and protecting his right to the water. The reasons which justify the donation to A apply with equal force to protecting C in obtaining water on equally favorable terms. If the water is not being used by A and B, then C should obtain it without cost. It is an injury to C and to the public to permit A to levy tribute on him for something which he obtained without charge from the public. If appropriations confer upon their holders a property right in water by virtue of which they are authorized to sell this water, then they ought to pay for the grant in the first place and they ought to be taxed on this property year after year exactly as a person owning any other form of property is taxed.

The evils of this doctrine do not end with the injustice it involves to subsequent users. Whenever it becomes fully established that an appropriation gives absolute ownership in water then all sorts of devices will be employed to secure an increase in the volume of an appropriation.

No one, except those who have had experience in restricting the volume of appropriations, under the present construction of our irrigation law, can have any adequate idea of the difficulties which would attend an adjudication of rights under a construction which would make the water of streams private property. It would open the way to secure by legal proceeding ownership of a commodity the ultimate value of which can scarcely be estimated. So long as control is restricted by the requirements of continued use, the claims to control will be limited to such use, but when appropriation means ownership the claim will only be limited by the supply. The abuses and complications would be unending. One is outlined below as an illustration to show the possibilities which would be presented.

Under the State law the maximum apppropriation, which can be made for irrigation, is one second foot for each 70 acres of land reclaimed. So far as measurements of the volume used have gone this allowance is in excess of the actual requirements of irrigation in this State, but in adjudicating rights it has been taken as an expression of opinion, on the part of the legislature, that it was a fair average requirement of irrigation. It has been impossible for the Board to determine, with any exactness, the volume required for the reclamation of any particular area, and it has been the practice to make appropriations for the maximum volume allowed by law. This has been done in the belief that this was at least an ample allowance and that the action of Water Commissioners could be relied upon to prevent waste. Since securing such appropriations a number of parties, who presented proof which claimed the maximum volume, have made requests for permission to sell a surplus. In one instance a party who had claimed and received an appropriation of four cubic feet of water for the reclamation of a particular area has since stated that by actual measurement only one cubic foot of water was required for its cultivation and has asked that he be permitted to sell the remainder. If such sale had been sanctioned the purchaser intended to apply the water so secured to land not now under irrigation. The water of the stream is now fully appropriated. The use of this on unirrigated land would deprive parties who have been using water from the stream for the past ten years of its enjoyment. In effect it would overturn the whole doctrine of priority of appropriation as now understood. Land now arid would take precedence over the claim of land reclaimed for a decade. The water could be taken away from orchards and gardens to be applied to sage brush and cactus.

The adjudication of rights is necessarily made in the begining of irrigation development on a stream. More water is required to reclaim land and to produce crops in this period than is needed after the soil has been watered for a number of years. It will be found, therefore, that if appropriations are for a sufficient volume at the time when made each one of the original appropriators on a stream will in a few years have a surplus. If an appropriation is limited to the right to use then the surplus belongs to the public and can be taken by subsequent settlers for the reclamation of additional areas, but if the original appropriator owns such surplus then the subsequent extension of the irrigated territory must depend upon his willingness to sell and the price demanded.

It is proper in conclusion to refer to another evil which would come with sales of water. The transfer of appropriations from one portion of a stream to another *will absolutely prevent any efficient division of water among appropriators.* It is a well known fact that the water diverted from a stream to be used in irrigation is not wholly lost. A large percentage returns to the stream as waste water or by percolation through the soil. In some instances fifty per cent. of the water first diverted from the stream returns to be used by appropriators below. If A, B and C are appropriators from a stream in the order named, the water which is available for B is not what remained after the diversion by A, but it is what remained plus what returns to the stream after use by A The water which is available for C is not alone what was left of the original volume after diversion by A and B, on the contrary none of the original volume may have been left in the stream, his entire supply may come from the water returned to the stream after its use by A and B. After irrigation has continued on a stream for a number of years there is an equilibrium established. The experienced Water Commissioner can determine exactly how much of the water diverted above may be expected to be returned to the users below. In dividing the water of the stream this is taken into account, and in this way the fullest use and greatest service from the waters of a stream are secured.

But if we are to have a system under which the order of the appropriations on a stream can be changed from year to year, by which the water diverted by A can be transferred and used below the point where C's diversion takes place, then there can never be any equilibrium. The experience of former years will be of no value and the work of the Water Commissioners must be performed blindly. When it is remembered that the diversion from some of the adjudicated streams of this State extends along them for a distance of one hundred and fifty miles, that the priority number of these diversions have no systematic arrangement, but their order is simply the result of chance, the perplexity of the problem of dividing water, should a transfer in these appropriations be permitted, can well be imagined. It is a most difficult performance to secure an approximately fair division of water as it is. It would be absolutely beyond the power of human effort or human intelligence to make such division if an indescriminate transfer of rights is permitted.

Another complication which attends any attempt to confer absolute ownership in water on any individual is the fact that to secure the fullest utilization of our water supply and the proper protection of those interested therein, not one interest but several must be considered. There are several rights growing out of the diversion and use of the water of a stream. There are the rights of those who construct canals to transport water; these are rights which belong to carriers solely There are the rights of those who build reservoirs to impound water which may be called rights of storage, and there are the rights of those who apply the water to any beneficial purpose, or user rights. If we are to confer absolute ownership on any one class to whom shall the water belong? Thus far, in this State, there have been no canals built to carry water for hire, nor reservoirs to store water by others than the users thereof. Practically, thus far, the rights of carrier and user have been united in the same person, so that there has been no necessity for legislation defining their respective values. It is to be hoped that this condition of affairs will continue, because it is believed that the building of canals to furnish water to hire is a prolific source of discord bebetween carrier and user which can be avoided if proper financial arrangements are made which will permit the user from the canal to become its owners and in this way cause the carrier interest to become united with the ownership of the land served.

ACTION OF BOARD OF CONTROL IN ACCORD WITH THE TEACHINGS OF EXPERIENCE.

It is but justice to the Board to state that the results of the experience of other States have fully confirmed the wisdom of its action. The States in which litigation over water rights is most prolific are the States which have conferred absolute property rights in water. The State in which this right has been made almost absolute is a State in which the expenses of litigation over water rights have been probably larger than the cost of all the ditches in this State. It is also proper to state that all those who have had any connection whatever with the administration of water rights believe that rights for irrigation should inhere in the land by which acquired. This is the view of every officer with whom I have conversed. It is the view held by all writers of recognized authority on this subject. The experience which has come from the contrary doctrine shows it to invariably result in oppression of users of water and in the insecurity if not destruction of agricultural values. This experience has extended over so long a period of time and been so uniform in results that we should heed its teachings, and now, while our irrigation system is yet in its formative period, we should place ourselves upon a proper basis. Some of the expressions of opinion on this question are so pertinent and so timely that they are herewith incorporated:

"A recognition of the danger of allowing water to be monopolized without regard to the land has led a commission appointed to inquire into Californian irrigation to declare that, 'as a matter of public policy, it is desirable that the land and water be joined never to be cut asunder; that the farmers should enjoy in perpetuity the use of the water necessary for the irrigation of their respective lands; that when the land is sold, the right to water shall also be sold with it, and that neither shall be sold separately.' "—Australian Report on American Irrigation.

"Italian experience, French experience and Spanish experience all go to show that the interests to be studied in relation to irrigation schemes are so many and so various, and so intimately bound up with the public welfare, that State control is imperatively necessary, and that for the protection of its citizens no monopoly can be permitted which would separate property in water from property in the land to which it is to be applied."—Fourth Progress Report, Royal Commission on Water Supply, Victoria, Australia.

"European experience shows * * * that, where waters belonging to the State are farmed and re-let by private individuals, water rights are a constant source of gross injustice and endless litigation. The consequence of these interminable vexations is that the poorer or more peaceably disposed land-holder is obliged to sell his possessions to a richer or more litigous proprietor, and the whole district gradually passes into the hands of a single holder." — G. P. Marsh, formerly U. S. Consul for Italy.

"The ancient principles of common law applying to the use of natural streams, so wise and equitable in a humid region, would, if applied to the arid region, practically prohibit the growth of its most important industries. Thus it is that a custom is springing up in the arid region which may or may not have color of authority in statutory or common law; on this I do not wish to express an opinion; but certain it is that water rights are practically being severed from the natural channels of the streams; and this must be done. In the change, it is to be feared that water rights will in many cases be separated from all land rights as the system is now forming. If this fear is not groundless, to the extent that such a separation is secured, water will become a property independent of the land, and this property will be gradually absorbed by a few. Monopolies of water will be secured, and the whole agriculture of the country will be tributary thereto—a condition of affairs which an American citizen having in view the interests of the largest number of people cannot contemplate with favor.

"Practically, in that country the right to water is acquired by priority of utilization, and this is as it should be from the necessities of the country. But two important qualifications are needed. The *user right* should attach to the *land* where used, not to the individual or company constructing the canals by which it is used. The right to the water should inhere in the land where it is used; the priority of usage should secure the right. But this needs some slight modification. A farmer settling on a small tract, to be redeemed by irrigation, should be given a reasonable length of time in which to secure his water right by utilization, that he may secure it by his own labor, either directly by constructing the waterways himself, or indicectly by co-operating with his neighbors in constructing systems of waterways. Without this provision there is little inducement for poor men to commence farming operations, and men of ready capital only will engage in such enterprises. * * * * * * *The right to use water should inhere in the land to be irrigated, and water rights should go with land titles.*"—Land of the Arid Region by J. W. Powell.

The people of the State should reflect upon this problem and understand its gravity and importance. The position of the Board of Control has been stated in order that the Legislature, which is soon to meet, may know exactly what it is, and that they may be enabled to take whatever action they deem proper. If the views of the Board of Control are not in accord with the views of the people of this State then the proper remedy is for the representatives of the people to fix by law the definition of an appropriation in such language that there can be no uncertainty as to its meaning.

REVIEW OF WORK

OF THE

ENGINEER'S OFFICE IN 1893 AND 1894.

PERMITS FOR NEW DITCHES.

Since the preparation of the last report of this office there have been recorded 472 Applications for Permits to appropriate water. The ditches which these applications describe, divert the water of 143 streams and 37 springs, and are intended to reclaim 1,275,303 acres of land. Plats showing the route of the proposed works and the land to be irrigated have been filed with 280 of these appropriations for new ditches, and 45 for enlargements. An extension of time has been granted to 10 applicants to prepare and file plats. Sixteen applications were rejected because of over appropriation of the stream to be diverted and 26 have been subsequently canceled for failure to file plat or because of notice from applicants that the project had been abandoned. Before canceling any permit because of failure to file plat, two notices were mailed to applicants, calling attention to the provision of the irrigation law, and notifying him of the proposed action. Where no reply was received it was taken as conclusive evidence that the project had been abandoned. To leave such permits of record is a double evil. It encourages disregard of a necessary provision of the law, and, by maintaining fictitious claims against streams, deters others from inaugurating works of improvement.

The applications for permit to divert and appropriate water have embraced nearly every form of beneficial use. The greater number have been applications for irrigation. The next largest number are for placer mining. In addition there have been applications for domestic uses, for watering of range stock, for manufacturing and power purposes, and for hot springs for medicinal uses. The first application of the latter character was rejected by the State Engineer because of a belief that it did not properly come under the provisions of the water law of the State. The question raised by these appropriations is whether or not the valuable consideration in the appropriations of hot springs is the water or the mineral ingredient which gave them their medicinal value. An appeal was taken to the State Board of Control and the decision of the State Engineer on this subject was over-ruled, since which time all applications for permits to appropriate medicinal springs, not detrimental to public interests, have been approved.

The law states that the State Engineer shall prepare a blank form to be used by applicants in preparing a statement on which the permit to appropriate water is based. It is, of course, impossible that this form should meet equally well all requirements, and as applications for irrigation embrace more than three-fourths of all the applications filed, the blank was prepared with a special reference to the requirements of this use. The advantage of having a uniform statement in systematizing and expediting the work of the Engineer's office is very great, and no serious difficulty has been met by other appropriators in consequence of this. The form of application in use is given below:

APPLICATION FOR A PERMIT TO DIVERT THE WATER OF THE STATE OF WYOMING.

WATER DIVISION NO............ DISTRICT NO ....

I,..., of ....
County of.......................................,State of ....
being duly sworn according to law upon my oath say:

1. The name of the applicant is..
....

2. The post-office address of the applicant is..
....

3. The use to which the water is to be applied is..
....

4. The name of the ditch or canal is...

5. The source of the proposed appropriation is...
....

6. The head gate of proposed ditch or canal is in...
....
..........................of section.........................., township ...., range...........

7. The said ditch or canal is to be ....miles long and is to pass through the following land: (give sections, townships and ranges) ....
....
....

8. The dimensions of said ditch are: (a) (At head gate), Width on top.................................. feet; with on bottom .... feet; depth.................................; grade......................................feet per mile.

(b) Give dimensions at each point where reduced in size, stating miles from head gate:
(At...), width on top.......................................feet;

width on bottom.................feet; depth..................................;
grade..................................feet per mile.
(At...), width on top.............................feet;
width on bottom.................feet; depth..................................;
grade..................................feet per mile.
(At...), width on top.............................feet
width on bottom.................feet; depth..................................;
grade..................................feet per mile.

9. Describe the character of proposed works, stating: 1st. The nature of material to be moved. 2nd. Number and length of tunnels, if any. 3rd. Amount of fluming, if any.

....

....

....

10. The estimated cost of said ditch is ....
....dollars.

11. The following lands are proposed to be irrigated: (give sections, parts of sections, townships and ranges)..............................

....

....

....

12. The time required for the completion of ditches and other distributing works is..year from.........
....189

13. The time required to complete the application of water to beneficial use stated in this application is ....
year...... from..189......

NOTE—Applicants must in giving location of head gate, state its situation in the smallest legal sub-division and whether on the east, west, north or south bank of the stream. Where possible send map of proposed works.

(Signed)

....

STATE OF WYOMING, } ss.
County of.. }

I hereby certify that the foregoing application was signed in my presence and sworn to before me by.. ....
this..day of..189

....

....

STATE OF WYOMING, } ss.
Engineer's Office. }

THIS IS TO CERTIFY that I have examined the foregoing application and have returned the same for the following reasons:

....

....

....

State Engineer.

STATE OF WYOMING, } ss.
Engineer's Office. }

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

The time for completing the work shall extend to............................
....189.....

The time for completing the application of water for beneficial use shall extend to...189.....

The amount of the appropriation shall be limited to one cubic foot per second of time for each..acres reclaimed on..189.... and the additional volume used for...purposes on or before said date.

IN WITNESS WHEREOF, I have hereunto set my hand this...day of...189.......

....

State Engineer.

NOTE—This application, if approved, must be followed within six months by a map or plat on a scale of two inches to the mile showing the location of the distributing works, the source of supply, and the legal sub-divisions of land to be irrigated.

It will be seen from the above that applicants are given a certain time in which to complete the ditch, and the users of water an additional period in which to apply the water to beneficial uses. The time for completing ditches is determined by the magnitude and cost of the work, varying from six months to six years in the applications approved. The additional time for completing the use of the water varies with the difficulties to be overcome, and the acreage embraced in a permit. It costs more, and requires more time to reclaim an acre of sage brush land than an acre of grass land. In the permits issued the period allowed has varied from one to five years.

In determining the question of approval or rejection of applications the State Engineer has felt disposed to err on the side of liberality rather than to run the risk of preventing the inauguration of any meritorious project. The only applications rejected have been those on streams already over appropriated or where there was a conflict with prior applications. In order to make a permit of any value it is necessary that its conditions be definite and that those who comply with them be protected by the state. This cannot be done fully under present conditions as the divided control of land and water is a barrier, but the State having given a permit to use water for the irrigation of certain lands, and fixed a time for its completion, no other permit should be issued covering the same land until the first shall have expired. This course has been adhered to in all cases where parties having prior claims could show their intention and ability to proceed without delay with the work. In one or two cases where there was nothing to show that the holder of a prior permit was doing any work and was standing in the way of actual appropriators the prior permit has been canceled and the latter application approved.

CHARACTER OF IRRIGATION WORKS FOR WHICH PERMITS WERE ISSUED.

The majority of the applications for permits to appropriate water for agricultural uses, describe ditches of small size. Over ninety per cent. propose to divert streams of limited volume which can be easily and cheaply controlled. Practically all of the ditches which have been built have been of this character. Nearly all have been the work of individual settlers, and have required little outlay except labor. The search for localities where ditches can be built cheaply has become more manifest as the opportunities for such ditches become more and more restricted. There is no section of the State so isolated, so remote from market, that it has not been prospected to find the opportunities it presents for a cheap diversion of water and reclamation of land, and there is probably not a stream in the State the waters of which have not been claimed by at least one appropriator. A few of the applications, however, describe large and expensive canals, costly surveys have been made, and accurate maps filed, but the surveys have not been followed by construction. Efforts to enlist capital to build large canals to reclaim public land have all proved fruitless, and as the opportunity which federal land laws presents for confiscating investments in canals is better understood they will be increasingly so, in the future.

During the past two years, as during the preceding five, there has not been a canal constructed in this State which involved an outlay of over $20,000, although I am informed that more than this sum was expended in surveys and in an effort to enlist capital to carry out a single project. It is within the truth to say, that during the past two years, more money has been expended in surveys and in efforts to secure capital to build canals from our large rivers than has been expended in actual construction of these ditches from the same sources. These surveys have, however, proven of value to the State as they have greatly increased the definite knowledge of our irrigable land and the character and cost of the works to reclaim it. Believing this data to be worth a wide dissemination reduced copies of the maps of some of the large projects have been made, and are inserted in this report, as a complement to the stream gaugings made by this office. By giving the area of irrigable land as determined by actual surveys and the water supplies measured, the public is placed in a position to judge intelligently the possible agricultural future of the State. In the case of several of the more important projects, particularly those of the Big Horn Basin, the investigations of the State Engineer preceded private enterprises. The area of irrigable land described in the Engineer's report for 1892, and the probable cost of irrigation works which it contains, created a widespread interest in that region and greatly stimulated investigation by private enterprise. The more complete and extensive surveys made since that report have confirmed the statements made on pages 13 to 25 of the preceding report of this office.

MISCELLANEOUS RECORDS.

One hundred and five Miscellaneous Statements connected with the record of water rights have been recorded. These embrace claims to water for ditches built under Territorials laws but which were not recorded in accordance with these laws; deeds to water rights and ditches, and records of changes in the location of ditches and plans for reservoir dams. The plans of the dams and discharge gates of 10 reservoirs have been examined and approved. In some cases this approval was not secured until after an essential modification of the plans of the original submitted. In many cases the original description and plans were very unsatisfactory and in a number of instances the approved descriptions and plan give a very inperfect idea of the proposed structure. They were approved because it seemed impossible for the applicants to furnish anything better without employing an engineer. The expense of this, in remote sections of the State, would be greater than the cost of the proposed work. In cases where the volume of water to be impounded is small and where there is no apparent menace to the lives or property of others, it has seemed better to accept incomplete plans than to involve the builder at a prohibitory expense to prepare proper ones. Nearly all of the plans examined were for works of small cost. Only three described masonry dams. The majority are intended to utilize natural basins for the impounding of water, provisions being made for drawing it off by means of deep cuts. Wherever the proposed basin is in the channel of a running stream, and the dam subjected to the dangers of floods, the plans have been made to provide for a structure of unquestioned safety. This office has been made aware, however, that the plans submitted to the State Engineer may differ widely from the completed structure. In two cases, which have come to the Engineer's knowledge, details insisted upon in the original plans, were omitted in the construction; the omission in one case nearly resulted in the destruction of the work. As the State Engineer exercises no control over construction, nor examines the work during such construction, he has, of course, no knowledge as to the manner in which the plans approved are carried out,

So long as this is the law he should not be held accountable for the disasters which may come nor should the public neglect to observe closely the reservoirs of a magnitude to be a menace to public safety. The present law is probably the best which can be devised under present conditions. State inspection of construction would be too expensive. The State examination and approval of plans has cost little and has been of marked benefit to reservoir builders. It has given to them engineering advice free of charge, and has, in several instances, prevented the building of dams which would certainly have given way. Aside from the considerations which led to such supervision—the protection of life and property of others--it has saved to reservoir builders alone more than the salary of the Engineer.

The highest dam for which a permit has been issued is 60 feet. It is situated in section 26, township 14 north, range 70 west. The most expensive and important is a proposed dam across the North Platte river at Hartville, the latter being intended for power purposes.

INFORMATION TO BE FURNISHED BY APPLICANTS FOR PERMITS TO APPROPRIATE WATER FOR FILLING RESERVOIRS.

1. File application for a permit on regular blank, describing route of ditch or canal filling reservoir and distributing water therefrom, and describing location and nature of proposed use.

2. Give name and location of reservoir.

3. State if it is situated in the channel of a running stream and if so furnish the following data:

(a) Give any gaugings of the discharge of this stream which you have made or can obtain.

(b) Give greatest observed discharge and state whether or not the stream is subject to summer floods.

4. Give area of reservoir in acres, and extreme and average depth of water in feet.

5. Describe the proposed dam or embankment, giving:

(a) Whether of earth, stone cribs or masonry.

(b) Dimensions, length on top, length on bottom; width on top and bottom with slopes of both front and back. Height of dam above water line when filled.

6. Give width of waste way and depth below top of dam.

7. All persons proposing to construct reservoirs covering more than 20 acres and having dams more than ten feet in height or dams above 10 feet in height across the channels of running streams must file plans and specifications showing all details of the proposed work. These to include both longitudinal and cross sections of the dam and of the waste way and of the outlet gate and discharge pipe. The specifications must be of such character as to enable the work to be constructed therefrom.

FEES FOR RECORDING STATEMENTS.

There should be a change in the present law governing the recording and approval of applications for permits to appropriate the water of the State. At present there is no fee for this work. The State furnishes the blank on which the application is made; the State Engineer examines the application on its receipt in this office and in case it is incomplete or incorrect is required to communicate with the applicant and secure its correction before approval. After its approval the plat when furnished has to be filed, and if unsatisfactory the State Engineer must correspond with the applicant to secure its correction. In case of the failure to file plats notice has to be given of such failure before the application is canceled. All of this is performed without cost to the appropriator. It occupies a large part of the time of the State Engineer and his assistants, and the furnishing of books, the postage and other incidental expenses connected with this work constitute a considerable portion of the contingent expenses of the office. It is a work which is done solely for the benefit of the appropriator and he should meet the actual expenses involved. There is no more reason why the State should pay for the recording of an application to appropriate water than it should pay for the recording of a deed to land. There was a reason for the law at the time of its passage, but this reason has since disappeared and the absence of any fee has begun to create a decided abuse of the State's liberality. Parties who have no well defined idea of constructing ditches file applications for permit simply because it costs nothing. A large percentage of the permits canceled last year would never have been recorded if there had been any cost attached to the original application. The tendency to record speculative filings is only one of the evils. The more aggravating one is the carelessness with which many of the statements are prepared. Under present conditions it costs nothing to the applicant for the time and expense spent in examining and correcting applications, nor does it cost anything for the applicant to file another when the necessity therefor is pointed out by the State Engineer. Within the past six months an application for a single ditch has had to be corrected and recorded three times because of carelessness of the applicant and because of changes in his plans.

This liberality is not limited to the citizens of this State. It extends to residents of other States and to foreign corporations. It is recommended that this be changed, and that a fee of two dollars, for recording the permits and for examining and filing of the map which accompanies the statement, should be provided. Such a fee would work no serious hardship to applicants and would greatly lessen the expense to the State of this office.

FIELD WORK.

The survey and measurement of ditches and the preparation of maps showing their location and the areas of land susceptible of irrigation, has occupied nearly all the time of both the Engineer and his Assistant which could be given to field work, and has consumed the larger part of the contingent appropriation. The surveys of the past two years have embraced ditches in Johnson, Sheridan, Crook, Weston, Converse, Laramie and Uinta Counties.

SAND CREEK, NEAR BEULAH, COOK CO.

SHELL CREEK, BIG HORN CO.

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THE SURVEY OF DITCHES DIVERTING WATER FROM CLEAR CREEK AND TRIBUTARIES.

The first work of 1893, was the survey and measurement of ditches diverting water from Clear Creek and tributaries. This work was in charge of my assistant, Mr. M. C. McFarlane, the State Engineer assisting in the work whenever his other duties would permit him to be absent from the office, the greater part of the surveys being made by Mr. McFarlane. The details of this work will be found in his report and need not be given in this. There are, however, some features in the irrigation system on this stream disclosed by the survey which are of sufficient interest to warrant discussion.

The principal stream, Clear Creek, has its origin in the mountains directly west of Buffalo, Wyoming, a little to the south of Cloud Peak. After it enters the mountains the stream divides into the north and south forks of Clear Creek. Of these the north fork is the larger and carries a considerably larger volume of water. The two forks unite before any irrigable land is reached.

North of the north fork of Clear Creek is French Creek, a small tributary, which does not reach the higher mountains of the Big Horn range, but rises near their base. Its water supply, therefore, is restricted, and formerly the stream ran almost if not entirely dry during the latter part of the irrigation season.

The next tributary is Rock Creek. Rock Creek, like French Creek,does not reach the summit of the range, although, draining a much more extended mountain area and having a considerably larger water supply than French Creek, it is, nevertheless, one of the streams which is subject to a very great variation during the irrigation season, there being a surplus of water during the early portion and a marked deficiency during the latter part

A few miles north of Rock Creek is Shell Creek, another of the streams having its source at the foot of the main range rather than at its summit. Shell Creek is not, properly speaking, a tributary of Clear Creek. It empties into Lake De Smet, which, at the present time, has no outlet, evaporation from its surface being sufficient to absorb all of the waters discharged into it from this stream. Its outlet if the water supply was sufficient, would be through a valley at its northern extremity into Box Elder Creek, a tributary to Piney Creek. There is evidence that at one time Shell Creek and Box Elder Creek were one and the same stream, that the waters of Lake De Smet were discharged through the valley and the marshes which now exist at the head of Box Elder Creek. But for a long period there has been no connection between them.

North of Shell Creek is Piney Creek, of which stream Box Elder Creek is a tributary and which is the largest tributary of Clear Creek, its volume being greater than that of the main stream. Piney Creek is one of the largest and most valuable streams for irrigation which leave the eastern slope of the Big Horn mountains. It rises near Cloud Peak and drains a considerable portion of the eastern slope of the Big Horn mountains. As it nears the foot-hills the stream divides up into a number of branches, from all of which ditches divert water. Taking these branches in their order from the south they are, after Box Elder Creek, J. A. Creek, Bear Gulch Creek, Little Piney Creek, Main Piney Creek and North Piney Creek. There are no tributaries to the north of North Piney Creek, the drainage of the country being to the north. Piney is the largest tributary of Clear Creek to the north. The stream has no tributary of any importance from the south.

Clear Creek and its tributaries form the drainage system for the eastern slope of the Big Horn mountains for a distance of about twenty-five miles north and south. There have not been such records of snow fall or the available run off from snow fall as would give any reliable information as to the available water supply from this mountain area. The stream gaugings made by this office have not been long enough continued nor sufficient in number to offer any answer to this question. Indeed, the character of the streams, and the location of the works which are already constructed to divert their waters, makes it extremely difficult to obtain any reliable answer through stream gaugings. This much is known, that there is a large volume of unused water which runs to waste during the months of May and June; that on certain of the tributaries of Clear Creek there is a shortage of water in July and August nearly every season.

The answer to the inquiry as to how the irrigated territory in this region is to be extended beyond the present limits is found in two things: A more economical and systematic use of water than prevails and in the construction of storage works to conserve the flood waters of May and June.

CHARACTER OF STREAM GAUGING.

An examination of the map of the ditches diverting water from Clear Creek and tributaries, facing page 68 of this report, will show the obstacles to obtaining a measurement of the volume of Clear Creek. A measurement cannot be had of the stream and its tributaries in a single gauging because of the large number of ditches diverting water above the union of the stream and its tributaries. Such a measurement would only show the volume of water which runs to waste, not the volume which is drained from the mountain. The same difficulty appears in the measurement of tributaries. Several years ago a controversy arose between the users of water in the City of Buffalo and the appropriators of water for irrigation from the ditches which head in the stream above the town. In order to settle this controversy it was important that there be an accurate record of the discharge of Clear Creek and through a joint effort of the City and County an excellent gauging flume was placed in the canon of the stream on the Military Reservation above all of the ditches which divert its waters outside the foot-hills. A complete record has been kept and is found in this report of the discharge at this point during the year 1893. This, however, does not give the run off of the stream. A ditch to divert the waters of the north fork of Clear Creek has been constructed some fifteen miles above, which carries the waters of this stream and discharges them into French Creek. If a record could be secured of the discharge of the two ditches thus diverting its water it would be possible to obtain the volume of Clear Creek proper, above the mouth of its tributaries, but from the nature of things it is extremely difficult to obtain such record. The two ditches which divert the water of Clear Creek into French Creek are at an altitude of between eight and nine thousand feet. The heavy snow fall of that region makes it difficult to examine them until the irrigation season has well advanced. There are no habitations within a considerable distance of their headgates, and no reason for any habitations except as made necessary by these ditches. There is no means, therefore, by which an accurate or reliable record can be had of their discharge. They are visited by their owners from time to time as necessity arises, but these visits are not regular, and are only of daily occurrence during the time when the ditches are running to their fullest capacity.

It is impossible to secure a record of the complete discharge of either Rock Creek or Piney Creek, for much the same reason that the attempted measurement of Clear Creek has proved futile. Ditches to divert their waters extend far up into the foot-hills. In order to secure a gauging station above the ditches which divert their waters it would be necessary to place the station above a considerable portion of the water supply. About the most valuable measurement which could be made, and the one which would show most clearly the volume of water available for the further extension of the irrigated territory, would be a measurement of the discharge below all of the ditches.

Such a measurement has never been kept but is contemplated for the future.

CHARACTER OF IRRIGATION DITCHES AND CANALS.

The opportunity to use the water of Clear Creek and tributaries is greatest near the base of the mountain. For a short distance after these streams emerge from the foot-hills there is an opportunity to divert the waters upon the uplands, but farther down the courses of these streams the country becomes broken and precipitous and of a character wholly unfit for agricultural purposes. Along the lower portions of both Clear Creek and Piney Creek, the only lands which can be reclaimed are the narrow valleys bordering the streams. The largest ditches, or the ditches which cover the largest areas, are found, therefore, near the foot-hills, the irrigated territory being practically continuous along the entire eastern slope of the Big Horn mountains from Clear Creek north to the Wyoming line. That is, there is a continuous slope of land covered by irrigation ditches, although not a continuous area of cultivated or irrigated land. While the soil of the uplands bordering the foot-hills is of a very superior quality, showing exceptional productiveness and is of a character which permits water to be distributed over it with but little erosion of the surface, its broken and irregular surface makes the distribution somewhat difficult and expensive, and renders it impossible to ever attain a high duty because of the excessive loss in distribution over surfaces having such excessive inclination and such irregular contour.

The taking of water from one stream to water land in the valley of another, which forms so marked a feature of irrigation in this section, threatens to complicate the settlement of rights to water and perplex Water Commissioners in its division hereafter. A ditch starts in the mountains at an elevation of between eight and nine thousand feet which carries a large proportion of the water of Clear Creek and empties it into French Creek. French Creek, thus reinforced, has a surplus water supply and a portion of the volume remaining from Clear Creek is carried over and discharged into Johnson Creek.

The opportunities for use of water along Johnson Creek are somewhat restricted but there are considerable areas under irrigation along Sales Creek which lies still further to the north, and a number of ditches along this stream which have an insufficient water supply; to remedy which a ditch has been completed from Johnson Creek discharging into Sales Creek. We have these different sets of appropriations: The original appropriators from French Creek claiming the water which emptied into the stream prior to its reinforcement from Clear Creek. We have the appropriators claiming the water turned into French Creek from Clear Creek. We have the appropriators living along Johnson Creek claiming the water from French Creek and from Clear Creek, and the further set of appropriators along Sales Creek claiming the water taken from Johnson Creek, French Creek and Clear Creek.

The discharge of Piney Creek being in excess of the uses of appropriators along the valley of this stream, and apparently in excess of the appropriators living along the valley of Clear Creek below the mouth of Piney Creek, appropriators have drawn upon this stream to irrigate the foot-hill land to the north. Here, however, a condition of affairs is met with that renders the situation more perplexing than the division of the water of Clear Creek. Piney Creek emerges from the mountains near the summit of a divide known as Massacre Hill. This hill separates the drainage of Tongue River on the north from the drainage of Clear Creek on the south. Within two miles of where it emerges from the mountain canon the stream runs within fifty feet of the summit of this divide, after which it turns southward and flows down its southern slope. The northern slope of this divide falls off very rapidly, almost one thousand feet in three miles. And the drainage on the north is directly and rapidly away from Piney Creek. The streams which have their origin along this divide have, of course, no perennial water supply, being formerly dry channels during a considerable portion of the year. The lands which border them, however, while they have an irregular and broken surface, are exceedingly fertile and productive and when reclaimed give excellent returns. To utilize them, therefore, three ditches have been carried across this divide at the point where Piney Creek flows near the summit, all of them crossing within a few hundred feet of each other. The first and most important is known as the Prairie Dog Water Supply Ditch, being intended for the irrigation of the lands along the valley of Prairie Dog Creek. The two other ditches are known as the Coffeen, and Sherman & Wood. Both the Coffeen and Sherman & Wood ditches cross the branches of Prairie Dog Creek, and water uplands which lie around the head of this stream, but they differ from this ditch in this: The Prairie Dog Ditch is built for the purpose of discharging water into the stream of the same name and then using the channel of this stream as a main canal from which each of the parties interested in the ditch would take their individual ditches exactly as laterals are taken from a main canal in ordinary practice. The original discharge of Prairie Dog Creek being ignored, along with claims of appropriators from the stream prior to its reinforcement from this ditch. There are, however, a number of appropriators claiming the waters of Prairie Dog Creek proper, separate and apart from the waters turned into it through Piney Creek and are asking that a decree be given for such appropriations. In the settlement of these water rights there occurs, therefore, the following complication: Prairie Dog is not a tributary of Clear Creek but of Tongue River. It does not, however, in its natural condition discharge any water into Tongue River, but is in effect a ditch diverting water from Piney Creek. In the adjudication of rights from Tongue River, therefore, Prairie Dog was omitted from the decree, but it has been included in the adjudication of Clear Creek and tributaries. The parties claiming appropriations from the original stream maintain that this is an error, that Piney is a tributary of Tongue River and that the adjudication of their rights should have been made at the time of the adjudication of that stream. The parties who are using this channel as a ditch and who receive their water supply from Piney Creek maintain that the action of the Board of Control was proper, that practically the entire water supply comes from Piney Creek, and that although situated in a different drainage basin, this stream and the lands reclaimed are a part of the irrigation system of Clear Creek and tributaries. In addition to the above there is a further complication in determining rights to water from Piney Creek. Piney Divide Ditch, taking water from Main Piney Creek discharges into Little Piney Creek. The water thus emptied into Little Piney Creek is taken out of this stream through the Babcock, Brown and Fullerton ditch, carried across Bear Gulch, across J. A. Creek, and finally discharges into Shell Creek. There are claimants to this water among the appropriators of Little Piney Creek, J. A. Creek and Shell Creek, but how the waters of North Piney Creek thus turned into these several streams are to be segregated from the waters of the streams themselves, how the original supply of these streams is to be determined, and how the rights of appropriators of the original volume, and of the appropriators of the augmented volume, is a problem likely to perplex the irrigation authorities of this State for years to come. Thus far the complications have not been serious because the irrigated area is small, and the controversies have been due more to a desire to have a settlement of rights than to suffering from lack of water, but with the extension of ditches and increasing use of water there will come a time when there will have to be a more accurate division and a more correct definition of the respective rights than seems now possible. The map facing page 68 shows the location of these streams and ditches.

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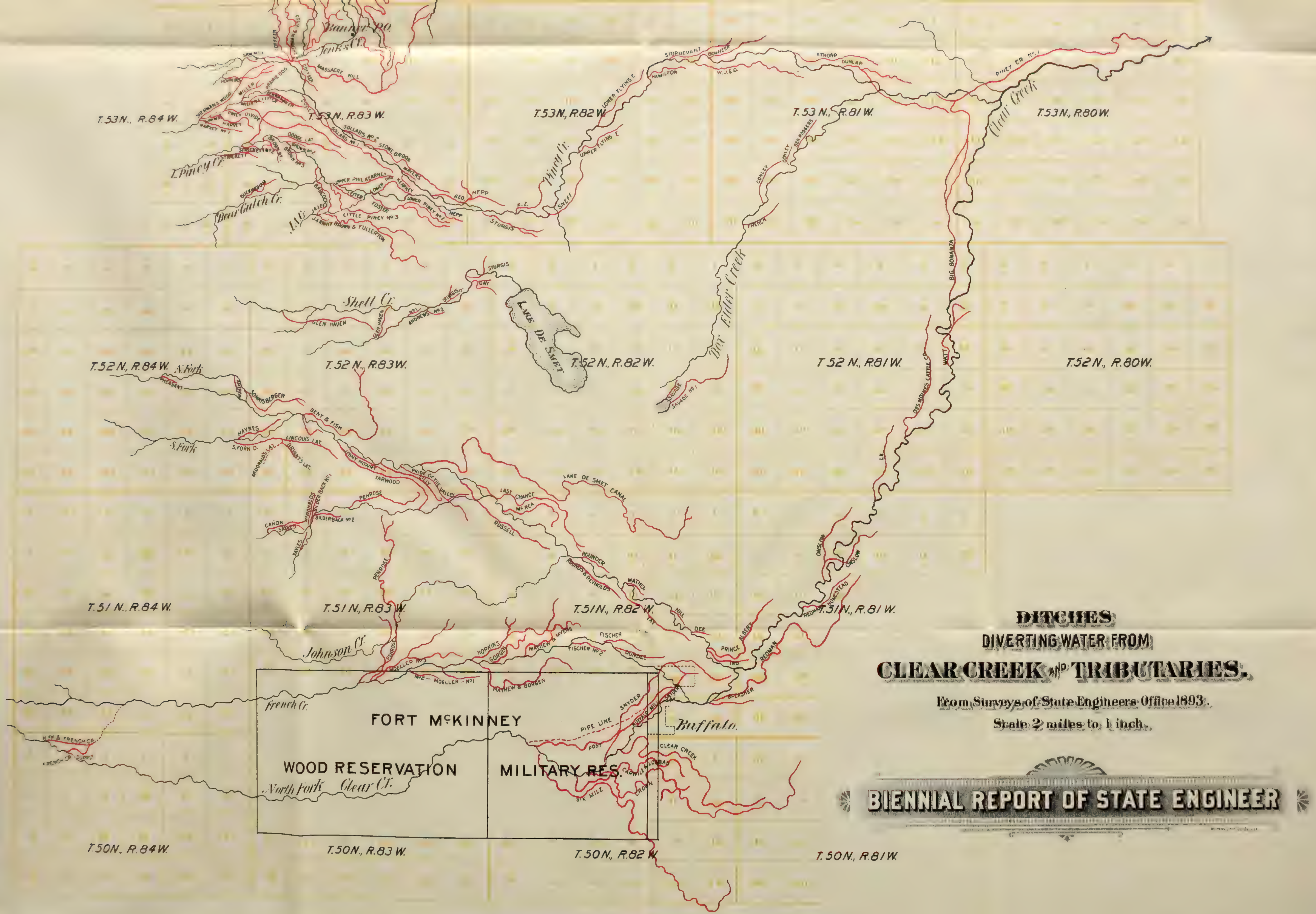

DITCHES
DIVERTING WATER FROM
CLEAR CREEK AND TRIBUTARIES.

From Surveys of State Engineers Office 1893.
Scale 2 miles to 1 inch.

BIENNIAL REPORT OF STATE ENGINEER

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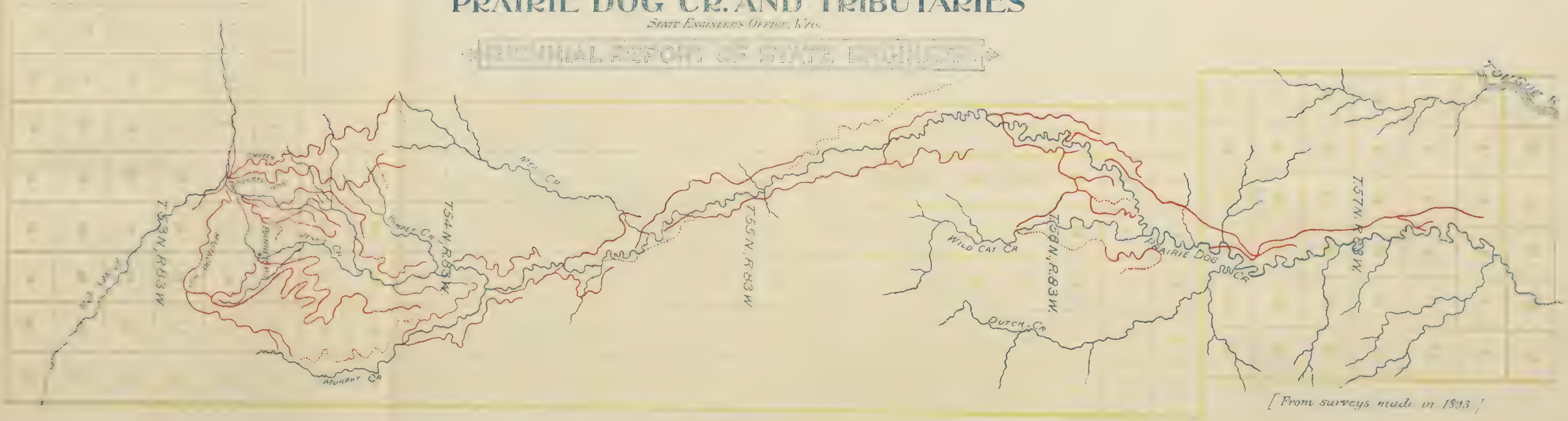
DITCHES
DIVERTING WATER FROM
PRAIRIE DOG CR. AND TRIBUTARIES
State Engineer's Office, Wyo.

BIENNIAL REPORT OF STATE ENGINEER



[From surveys made in 1893.]

[illegible] PRINTERS [illegible] CHEYENNE, WY.

It will be noticed on the map of Prairie Dog Creek that the ditches are not named. This is due to the fact that they are all laterals of the Prairie Dog Water Supply Ditch and have not been recorded and treated as separate appropriations.

Permits have been issued for ditches to divert water from Piney Creek into Rock Creek on the south, and into Little Goose Creek on the north. A canal is projected to carry water from the South Fork of Clear Creek into Crazy Woman Creek. It is also proposed to further reinforce the water supply of Shell Creek from Piney Creek, convert Lake De Smet into a reservoir and use it for the irrigation of lands lying around the head and along the valley of Box Elder Creek. Exactly where this commingling of waters and complication of rights will end it is difficult to predict. One thing, however, is fully established, that the Water Commissioner for this District will have to be a superior order of being if these different rights are to be protected.

SURVEYS IN CROOK AND WESTON COUNTIES.

The survey of ditches in Crook and Weston Counties was intended to embrace everything east of the Belle Fourche and north of Cheyenne River including one tributary of Cheyenne River, Beaver Creek. So far as has been learned all of the ditches of this region are surveyed, but from the nature of the irrigation of that country some of the ditches may have been omitted. The reason for this uncertainty lies in the fact that many of the ditches constructed from these streams have apparently proved unprofitable, and are at the present time abandoned. Some of the largest and most expensive ditches taken from Belle Fourche are not used, and there is an apparent abandonment of quite a number on Sundance, Redwater and some of the less important streams. There are two reasons for this condition of affairs: An insufficient water supply, and the financial disasters which have overtaken a number of the large cattle companies of this region. Some of the largest ditches were built by cattle companies as a convenient means of acquiring title to land through the operation of the Desert Land Law. It is probable that the management of these ditches by these companies was always unprofitable and, with their failure, they were abandoned. Under more economical management some of these will doubtless be again brought into use.

The agricultural outlook of this section is the most discouraging of any met with in the surveys of this office. The first stream surveyed was Redwater Creek and tributaries, one of these tributaries being Sundance Creek, on which the county seat of Crook County is situated. About half of the ditches built to utilize the waters of Sundance Creek have been abandoned and some of them, through neglect, have been practically obliterated. There has not only been an abandonment of ditches but an abandonment of homes as well. In one instance there was found an excellent residence, good fences, two substantially constructed ditches, in fact all of the equipment necessary to a ranchman's life and occupation, yet the house was unoccupied and the ditches unused. The difficulty in this instance was a lack of water for irrigation.

Along Sundance Creek from the town of that name to its junction with Redwater Creek the stream several times disappears beneath the surface and reappears when flowing over a ledge of rocks. Hence, there is no opportunity or necessity for the division of water among appropriators, and the value of water rights depends not so much on the number of the priority as upon the particular location of the ditch. A failure to recognize this is the cause of the lack of success of some of the ditch builders. Their head-gates were located in sections where there was surface water supply only, for a short period in the season.

The most important stream to be found in Crook County is Sand Creek, a short but important tributary of Redwater Creek. This stream has an interest and importance beyond its value for irrigation, and opens up one of the most interesting subjects for conjecture to be found in the study of the water supply of this State. It does not derive its volume from any visible source. There is not sufficient drainage area to make its discharge of any consequence, yet when measured at Beulah the discharge was 70 cubic feet per second. This entire volume comes from a series of springs extending along the channel of the creek for about a quarter of a mile. The volume is substantially uniform throughout the year, varying but little, winter or summer. At the place where measured, about three or four miles below the springs, it is said never to freeze over even in the severest weather. The illustration facing page 60 shows the discharge of this stream in August, 1893, at the time when nearly all the streams of this county were dry for the greater part of their length, and was taken below the head of the largest ditch in the county. No conclusive answer can be given as to the source of this water supply. It has been suggested that it is the outlet for much of the water which sinks in Belle Fourche and its tributaries to the west, and in Sundance and Redwater Creeks. A large portion of this country is underlaid with gypsum and wherever streams cross this the water sinks, in a number of instances reappearing again apparently undiminished, or only slightly diminished in volume. The other conjecture is that this one of the outlets of the water of the Big Horn mountains, which is known to disappear through subterranean channels in the lime stone strata which covers the eastern slope of these mountains. Whatever its origin, this stream, insignificant in length and in the territory it drains, carries a larger volume of water during the months of July and August than all the other streams of Crook County combined. But little use is made of this stream in Wyoming. It affords power for the flour mill at Beulah and fills one large ditch, which, however, irrigates but little land in Wyoming, the principal irrigated territory being east of the State line in Dakota.

Redwater Creek has the distinction of supplying the warmest water in winter and the coldest water in summer of any stream in this Water Division. As has been stated, the coldest weather fails to freeze the waters of Sand Creek, one of its tributaries. On another, Sundance Creek, is a spring which is ice cold during the most intense heat of summer. This stream is situated near the base of Sundance mountain, flows to the surface through a mass of broken stone at the base of one of its cliffs. It flows only in summer. With the beginning of freezing weather it ceases, and does not begin until spring has well advanced. Not only is its flow restricted to summer months but it is greatest during the hottest portion of this season. We visited it on August 23rd and 24th. On these two days the temperature of the air in the shade registered 98 and 101 degrees, yet the temperature of this water, measured at the point where it first shows on the surface was uniformly 39½ degrees, or only 7½ degrees above freezing point. The general belief in this region is that the water comes from the melting ice of some cavern in the mountains.

It is difficult to forecast the agricultural possibilities of this region. At one time it was believed that dry farming, that is farming without irrigation, could be successfully pursued in the greater part of both Crook and Weston Counties, and a large number of settlers moved in and made the attempt. Many of these attempts have proved failures, but there are localities in which, in both 1892 and 1893, excellent crops were grown, and the settlers on these farms inform me that they had never had a failure. It seems probable, therefore, that further acquaintance with this region will show that there are restricted localities in which the greater retentiveness of moisture in the soil and the influence of the mountains in creating more than the average rain fall will enable crops to be grown without irrigation. It is also probably true that the duty of water will be much greater here than in some other portions of the State, enabling the restricted supply of the streams to serve a greatly increased acreage. Another factor will be the establishment of reservoirs to conserve

WHERE THE WATER IS STORED

the storm waters. The enormous drainage area of Belle Fourche furnishes a large volume for a brief period during the spring and, at other times, in the season of summer storms. If facilities can be provided for the storage of this water the volume so stored can be made to serve a larger acreage of land than an equal volume of other sections of the State. The grazing lands in this region are unusually valuable. The most luxuriant growth of native grasses which I have yet seen in this State was found on the uplands surrounding the Bear Lodge mountains, and large areas are each year mowed for the hay they produce.

The concluding field work for 1893 was the survey of the ditches from Rawhide Creek in Water District No. 13, Water Division No. 1, and Muddy Creek in Water District No. 1, Division No. 1. Both of these are small streams with a limited area under irrigation.

FIELD WORK IN 1894.

The first work in 1894 was the rating of measuring flumes on Horse Shoe Creek, in Water District No. 13, Water Division No. 1, and on Little Goose Creek and Wolf Creek, in Water Districts Nos. 4 and 5 respectively, in Division No. 2. This is the beginning of the placing of measuring flumes in irrigation ditches. The law requires such flumes to be placed in all ditches when required by the State Engineer, but it has not been found necessary heretofore to carry out this provision, the Water Commissioners being able to make a satisfactory division of water without their assistance. Some difficulty having been experienced in 1893 on the streams above mentioned the Commissioners requested that plans be prepared, and that the appropriators be required to place flumes in their ditches. Accordingly the following notice was sent to the Division Superintendents of Divisions Nos. 1 and 2:

OFFICE OF

STATE ENGINEER.

CHEYENNE, WYO., NOV. 6, 1893.

....

Superintendent Water Division No..........

Please call the attention of appropriators of water in your Division to the necessity of constructing and maintaining head-gates and measuring flumes in all ditches diverting the public waters of the State in accordance with the provisions of Section 46, Chapter 8, Session Laws, First State Legislature.

The object of such measuring flumes is the accurate determination of the amount of water flowing in the ditches in cubic feet per second of time. The following regulations should govern their construction:

This measuring device should be an open flume, with apron and wings, constructed as shown on Plates "A" and "B" accompanying this letter.

Where the bottom of the ditch exceeds 6 feet in width the flume is to be 16 feet in length, and where less than 6 feet in width the flume is to be 12 feet in length, exclusive in each case of the apron and wings. The width of the flume is to be a little less than the average width of the ditch and a little greater than the width of the ditch on the bottom. The sides of the flume are to be perpendicular, and boarded upon the inside of the posts, and to be of sufficient height to carry the greatest amount of water likely to flow in the ditch. The top of the floor of the flume must be of the grade of the bottom of the ditch. The flume is to be erected on as straight a portion of the ditch as practicable and not less than 100 nor more than 800 feet below the head-gate.

At points 100 feet above and below the location of rating flume it is required that timbers, not less than 3 inches thick and 8 inches wide, and of a length not less than the width of the ditch, be sunk in the bed of the ditch at right angles to the line thereof, until the top of the timber shall be on the grade of the ditch. After the measuring flume is erected, it will be rated by the State Engineer or his Assistant, and a *datum* mark will be made thereon indicating the height to which the Water Commissioners may raise the water in the flume to allot the ditch the amount decreed thereto. Dead water in the flume should not exceed 1-10 of a foot in depth when the head gate of the ditch is closed.

Now that the irrigation season is practically over you will urge upon the owners of all ditches without rating flumes the necessity of compliance with the law in regard thereto, and will require that such flumes be placed in the ditches before another irrigation season begins. You will also call the attention of the owners of ditches without proper head-gates to the statute above referred to, which requires them to erect and keep in good repair head-gates at the heads of their respective ditches. Substantial and well constructed head-gates are essential to the proper distribution of the water of the streams by the Water Commissioners, and a strict compliance with the law in this respect will be required as a condition upon which water will be turned into the ditches during the coming season.

Respectfully yours,

....

State Engineer.

These Superintendents prepared and mailed to each appropriator on the streams above named a copy of the above letter with the following note:

STATE BOARD OF CONTROL.

.... 189

M..

....

Dear Sir:

You are hereby notified that a head-gate and measuring flume must be constructed and placed in the..............................

Ditch taking water from ....
Creek, on or before April 1st, 1894.

The head-gate must comply with the provisions of Section 46, Chapter 8, Session Laws of the First State Legislature, and the measuring flume must be built in accordance with the plans and specifications prepared by the State Engineer and enclosed herewith.

Kindly advise me when these have been completed in order that they may be inspected by the State Engineer before the beginning of the irrigation season of 1894.

....
Superintendent Water Division No............

Nearly all of the appropriators on Horse Shoe Creek complied with the law or attempted to do so, but it was found on examination that some of the measuring flumes had been badly placed and would not give a satisfactory rating.

On the streams in Water Division No. 2 the appropriators were not so prompt in their compliance with the law so that at the time of our visit to the stream in June, 1894, but a small number of flumes were then in place although a considerable number were constructed since that time and are awaiting an examination next year.

The following tables show the result of the gaugings made:

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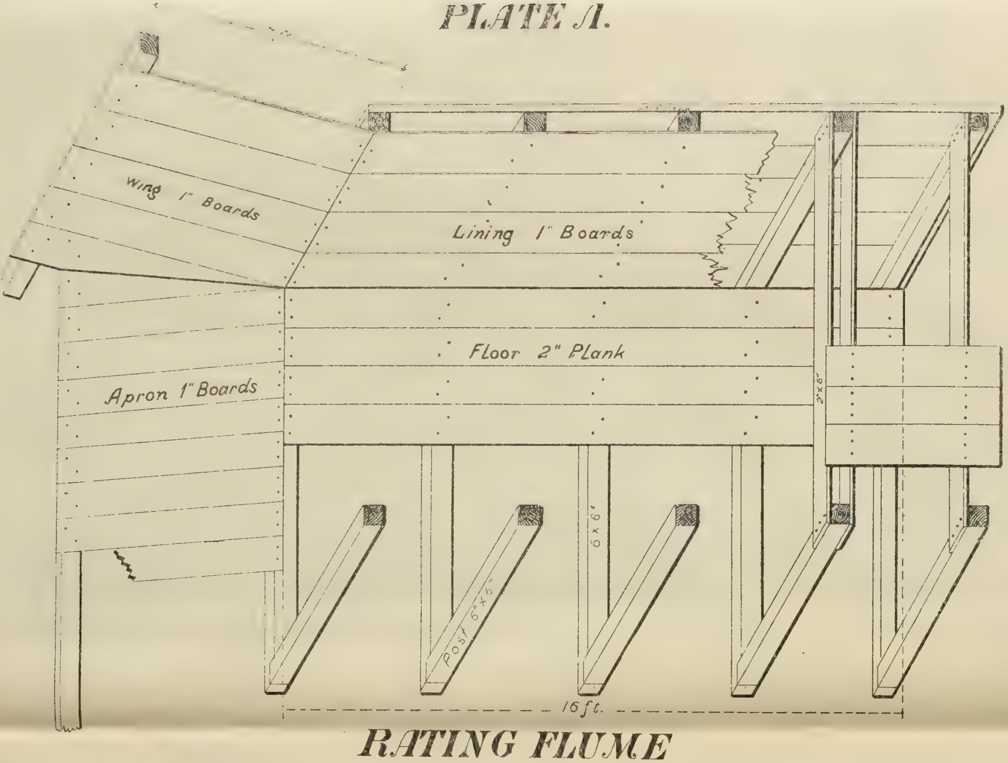
PLATE A.

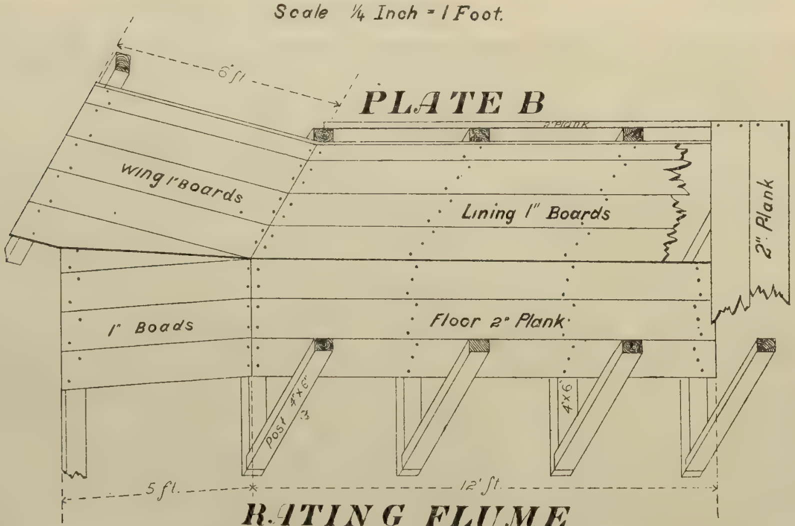


RATING FLUME

For ditches exceeding Six feet in width.

Scale ¼ Inch = 1 Foot.

PLATE B



RATING FLUME

For ditches less than Six feet in width

Scale ¼ Inch = 1 Foot

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Conalo Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.1	1.1		2.1		
.2	0.1	1.2		2 2		
.3	0.4	1.3		2.3		
.4	0.7	1.4		2.4		
.5	1.1	1.5		2.5		
.6	1.7	1.6		2.6		
.7	2.3	1.7		2.7		
.8		1.8		2.8		
.9		1 9		2.9		

Gauged by M. C. McFarlane,
on the 24th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
18		June,	1887	0.31		0.29

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per secodd of water which will pass through the measuring flume of the GORDON Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.6	1.1		2.1		
.2	1.5	1.2		2.2		
.3	3.1	1.3		2.3		
.4		1.4		2.4		
.5		1.5		2 5		
.6		1.6		2.5		
.7		1.7		2 7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 24th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
7		March,	1884.	1.50		0.20

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the T. FREANEY No. 2 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.3	1.1		2.1		
.2	0.5	1.2		2.2		
.3	1.1	1.3		2.3		
.4	1.6	1.4		2.4		
.5	2.3	1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 23d day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
10	15	July,	1884.		2.10	0.47

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Freaney and Waln Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.2	1.1		2.1		
.2	0.4	1.2		2.2		
.3	0.9	1.3		2.3		
.4	1.5	1.4		2.4		
.5	2.2	1 5		2.5		
.6	2.9	1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 23d day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
27	1	Dec.	1892.	1.39		
27	"	"	"	1.17		
					2.56	0.55

HORSE SHOE CREEK

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the T. FREANEY No. 3 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge. in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.3	1.1		2.1		
.2	0.5	1.2		2.2		
.3	0.9	1.3		2.3		
.4	1.3	1.4		2 4		
.5	1.8	1.5		2 5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1 9		2·9		

Gauged by M. C. McFarlane,

on the 24th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
15	15	Feb.	1886.		1.10	0.36

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the PETER PAULSON NO. 2 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.0	1.1		2.1		
.2	0.0	1.2		2.2		
.3	0.2	1.3		2.3		
.4	0.5	1.4		2.4		
.5	0.9	1.5		2.5		
.6	1.5	1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 25th day of May, 1894.

Appropriation Priority No.	DATE. Day.	Month.	Year.	Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
17		April	1887	0.39		0.37

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Peter Paulson No. 1 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.0	1.1		2.1		
.2	0.0	1.2		2.2		
.3	0.1	1.3		2.3		
.4	0.2	1.4		2.4		
.5	0.6	1.5		2.5		
.6	0.9	1.6		2.6		
.7	1.4	1.7		2.7		
.8	1.9	1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 25th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
14	15	April	1885.	1.10		0.64

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Howard Smith and McDermott Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.0	1.1		2.1		
.2	0.1	1.2		2.2		
.3	0.8	1.3		2.3		
.4	1.9	1.4		2.4		
.5	3.1	1.5		2.5		
.6	4.3	1.6		2.6		
.7	5.8	1.7		2.7		
.8	7.6	1.8		2.8		
.9		1.9		2.9		

Gauged by Elwood Mead and M. C. McFarlane,
on the 20th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
23		Nov.	1889.	1.96		
23		"	"	2.30		
					4.26	0.60

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the WALKER No. 1 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remark
.0		1.0	10.6	2.0		
.1	0.0	1.1	12.3	2.1		
.2	0.7	1.2	14.3	2.2		
.3	1.5	1.3	16.3	2.3		
.4	2.4	1.4		2.4		
.5	3.2	1.5		2.5		
.6	4.3	1.6		2.6		
.7	5.8	1.7		2.7		
.8	7.3	1.8		2.8		
.9	8.9	1.9		2.9		

Gauged by M. C. McFarlane,
on the 20th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
1	15	April	1879	11.53		1.05
3		Summer,	1881	2.53		
3		"	"	2.10	16.16	1.30

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the MacFarlane No. 2 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.0	1.1		2.1		
.2	0.0	1.2		2.2		
.3	0.1	1.3		2.3		
.4	0.5	1.4		2.4		
.5	1.2	1.5		2.5		
.6		1.6		2.5		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 22d day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
26	12	Sept.	1891.	0.80		0.44

HORSE SHOE CREEK

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the P. HALL No. 1 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.3	1.1		2.1		
.2	0.8	1.2		2.2		
.3	1.4	1.3		2.3		
.4	2.1	1.4		2.4		
.5	2.7	1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 24th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
5½	1	April	1883.		1.17	0.27

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the St. Denis Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.1	1.1		2.1		
.2	0.4	1.2		2.2		
.3	0.7	1.3		2.3		
.4	0.9	1.4		2.4		
.5	1.5	1.5		2.5		
.6	2.1	1.6		2.5		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 23d day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
4	15	May,	1882.	1.29		0.46
19			1887.	0.24		
					1.53	0.50

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the W. S. Waln Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth n feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.2	1.1		2.1		
.2	0.6	1.2		2.2		
.3	1.4	1.3		2.3		
.4	2.4	1.4		2.4		
.5		1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 23d day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
13		Mar.	1885		0.60	0.20

HORSE SHOE CREEK

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the WALKER NO. 2 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.4	1.1		2.1		
.2	1.1	1.2		2.2		
.3	2.1	1.3		2.3		
.4	3.2	1.4		2.4		
.5	4.7	1.5		2.5		
.6	6.5	1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 19th day of May, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
2	15	Nov.	1880.	3.07		0.39

HORSE SHOE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the MacFarlane No. 1 Ditch in Water District No. 13, in Water Division No. 1.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.4	1.1		2.1		Flume about 600 ft. below head-gate.
.2	2.0	1.2		2.2		
.3	3.6	1.3		2.3		
.4	5.4	1.4		2.4		
.5	7.5	1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 21st day of May, 1894.

Appropriation Priority No.	DATE. Day.	Month.	Year.	Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
9		Spring,	1884.	1.53		0.17
24		Nov.	1891.	2.04		
					3.58	0.30

LITTLE GOOSE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the West Side Ditch in Water District No. 4, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.8	1.1		2.1		
.2	2.3	1.2		2.2		
.3	3.8	1.3		2.3		
.4	5.8	1.4		2.4		
.5		1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 13th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
35	1	May	1884.		5.17	0.4

LITTLE GOOSE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the UPPER EAST SIDE Ditch in Water District No. 4, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.7	1.1		2.1		Scarcity of water prevented gauging to the full extent of the appropriation.
.2	1.1	1.2		2.2		
.3	2 0	1.3		2.3		
.4	3.3	1.4		2.4		
.5	4.8	1.5		2 5		
.6	6.0	1.6		2.5		
.7		1.7		2 7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 14th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
23					9.15	

LITTLE GOOSE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Colorado Colony Ditch in Water District No. 4, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge. in cubic feet per second.	Remarks.
.0		1.0	30.8	2.0		
.1	1.0	1.1		2.1		Scarcity of water prevented gauging to the full extent of the appropriation.
.2	2.8	1.2		2.2		
.3	5.6	1.3		2.3		
.4	8.3	1.4		2.4		
.5	11.1	1.5		2.5		
.6	14.6	1.6		2.6		
.7	18.8	1.7		2.7		
.8	22.2	1.8		2.8		
.9	27.0	1.9		2.9		

Gauged by M. C. McFarlane,
on the 15th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
32	4	July	1883.		90.3	

LITTLE GOOSE CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the GERDEL Ditch in Water District No. 4, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0	2.8	2.0	12.9	
.1	0.1	1.1	3.2	2.1	14.7	
.2	0.2	1.2	3.8	2.2	16.7	
.3	0.4	1.3	4.6	2.3	18.7	
.4	0.6	1.4	5.4	2.4		
.5	0.9	1.5	6.2	2.5		
.6	1.2	1.6	7.3	2.5		
.7	1.5	1.7	8.4	2.7		
.8	1.8	1.8	9.7	2.8		
.9	2.2	1.9	11.0	2.9		

Gauged by M. C. McFarlane,
on the 13th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
5	15	April	1880.		1.86	0.8

WOLF CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the GARRARD AND SNYDER Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0	8.1	2.0		
.1	0.0	1.1	6.8	2.1		
.2	0.2	1.2	11.7	2.2		
.3	0.5	1.3	13.6	2.3		
.4	0.9	1.4	15.7	2.4		
.5	1.5	1.5	18.1	2.5		
.6	2.6	1.6		2.6		
.7	3.5	1.7		2.7		
.8	4.9	1.8		2.8		
.9	6.5	1.9		2.9		

Gauged by M. C. McFarlane,
on the 17th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
3		April	1883.		10.71	1.22

WOLF CREEK

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the OLD RELIABLE Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.6	1.1		2.1		
.2	1.7	1.2		2.2		
.3	3.0	1.3		2.3		
.4	4.6	1.4		2.4		
.5	6.5	1.5		2.5		
.6		1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 17th day of aune, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
6	8	May	1884.		3.0	0.3

WOLF CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the Wolf Creek Canon Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0		2.0		
.1	0.2	1.1		2.1		Scarcity of water prevented gauging to the full extent of the appropriation.
.2	0.6	1.2		2.2		
.3	1.2	1.3		2.3		
.4	1.8	1.4		2.4		
.5	2.6	1.5		2.5		
.6	3.5	1.6		2.6		
.7		1.7		2.7		
.8		1.8		2.8		
.9		1.9		2.9		

Gauged by M. C. McFarlane,
on the 17th day of June, 1894.

Appropriation Priority No.	DATE. Day.	DATE. Month.	DATE. Year.	Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
13		Nov.	1885.		4.28	

WOLF CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the GRINNELL LIVE STOCK Co. Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0	8.2	2.0		
.1	0.4	1.1	9.6	2.1		Scarcity of water prevented gauging to the full extent of the appropriation.
.2	0.9	1.2		2.2		
.3	1.5	1.3		2.3		
.4	2.2	1.4		2.4		
.5	2.9	1.5		2.5		
.6	3.8	1.6		2.6		
.7	4.7	1.7		2.7		
.8	5.8	1.8		2.8		
.9	6.9	1.9		2.9		

Gauged by M. C. McFarlane,
on the 17th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
8	11	Sept.	1884.		42.86	

WOLF CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the HARDIN Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0	6.8	2.0		
.1	0.6	1.1	7.8	2.1		
.2	1.1	1.2	8.8	2.2		
.3	1.6	1.3		2.3		
.4	2.4	1.4		2.4		
.5	3.1	1.5		2.5		
.6	3.8	1.6		2.6		
.7	4.4	1.7		2.7		
.8	5.2	1.8		2.8		
.9	5.8	1.9		2.9		

Gauged by M. C. McFarlane,
on the 19th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
1		Sept.	1881.		7.71	1.1.

WOLF CREEK.

GAUGING RECORD.

Table giving the number of cubic feet per second of water which will pass through the measuring flume of the CAMPBELL Ditch in Water District No. 5, in Water Division No. 2.

Depth in feet.	Discharge, in cubic feet per second.	Depth in feet	Discharge, in cubic feet per second.	Depth in feet.	Discharge, in cubic feet per second.	Remarks.
.0		1.0	4.9	2.0		
.1	0.1	1.1	5.7	2.1		
.2	0.2	1.2	6.5	2.2		
.3	0.6	1.3	7.3	2.3		
.4	0.8	1.4	8.4	2.4		
.5	1.3	1.5	9.3	2.5		
.6	1.9	1.6	10.3	2.5		
.7	2.5	1.7	11.6	2.7		
.8	3.3	1.8		2.8		
.9	4.0	1.9		2.9		

Gauged by M. C. McFarlane,
on the 19th day of June, 1894.

Appropriation Priority No.	DATE.			Cubic feet per second in each Appropriation.	Total number of cubic feet per second in each Appropriation.	Depth of Water in flume to correspond.
	Day.	Month.	Year.			
4		Fall	1883.		6.86	1.3

IRRIGATION IN SALT RIVER VALLEY.

The ditches taking water from Salt River and tributaries were surveyed during the present year. The drainage basin of this stream with that of John Day's River forms District No. 8, of Water Division No. 4. This district has many unique and interesting features. Its isolation is complete. To the east an unbroken range of mountains rises 4,000 feet above it, to the west low hills rise into a range 2,000 feet higher than the valley, the average altitude of which is 6,000 feet above sea level. No matter from what direction or at what point one enters it a mountain summit must be crossed. The greater elevation and heavy snow fall on the eastern range cuts off all travel from the east for about half the year, and renders it somewhat uncertain at other times

A description of this valley appears in Hayden's report for 1877. A paragraph is worthy of being quoted because of the statement as to its agricultural possibilities:

"Salt River is an important southern branch of the Snake, entering it about three miles west of the mouth of John Day's River. It heads far to the south, opposite branches of Smith's and Thomas' Forks of Bear River, among bare, rolling hills. Collecting its branches at a point nearly west of the south end of the Salt River mountains, it pursues a course nearly north down a broad valley, of which it occupies the western margin. In this valley it receives several large branches from the Salt River range, and two, Crow and Smoking Creeks, from the hills which limit its valley on the west.

"The valley has a length of forty-five miles, with an average width of about five miles. Its surface is flat and unbroken, except in one place, where there is a broad hill or bit of plateau which has forced the river into a canon. In several places near the river the valley is swampy, but generally it is dry, with a coarse, gravelly soil, *of little value for agriculture.* Grass is abundant and of excellent quality, and as a grazing region, especially in winter, I should judge it to be well adapted." (P. 696.)

The poor character of the soil is again referred to on page 704, in an article on the arable and pasture areas:

> "On John Day's River there is no arable land. Salt River Valley is about 25 miles long, with an average width of 4 miles. Most of this can be irrigated, but the soil of the middle part of the valley only is of value, as near the mountains it is gravelly."

The experience of settlers has shown the actual facts to be almost the reverse of the above. On soil regarded as of little value for agriculture, and on land adjacent to the foot-hills, 90 bushels of oats per acre were grown this year. The unoccupied lands in the upper valley are in the middle, the cultivated farms border the mountain. This is not on account of difference in soil but because of climatic advantages. Instead of being an excellent grazing region in winter nothing of the kind is possible because of the heavy snow fall which covers the entire surface of the valley. That such an opinion should have been held by the first explorers is not to be wondered at. The first settlers held to the same view and without the actual results before them few would believe otherwise.

The first attempt at settlement was a failure. All of the original party abandoned their homes and for a year or two the valley was again unoccupied. The second attempt, begun some seven years since, has resulted in an uninterrupted growth. In that time 138 ditches have been built and were surveyed. These cover about 50,000 acres of land of which it is estimated that 15,000 are now being cultivated. This is probably the largest area of cultivated land in any single water district, and it is undoubtedly the largest area reclaimed within this time in any single district.

WATER SUPPLY.

The water supply is abundant and unusually accessible. Not only does each canon of the Salt River range carry a perennial stream but these streams, without exception, enter the valley on ridges so that all that is necessary to divert their water is to cut an opening in the banks. On the west side, Crow Creek and Stump Creek are large and perennial streams. The point where most of these streams are gauged has much to do, however, with their apparent volume. The discharge of Salt River in the narrows between the two valleys was in October almost equal to that of the North Platte River on the same date. Twenty miles above the channel of the stream was dry and for several months previous not a particle of water had appeared upon the suface. Cottonwood Creek had a flow in the canon, at the time of my visit, of about 100 cubic feet per second. There was no water whatever in the stream where it empties into Salt River. Birch Creek, Cedar Creek, Dry Creek, and a number of other lesser streams, all disappear immediately after entering the valley and nearly all of the streams on the east side suffer a considerable loss. This is due to the fact that the valley itself is one immense boulder and gravel bed. The waters of the upper valley disappear in this to reappear again at the point where the uplifted ridge of stratified rock crosses the channel of Salt River separating the valley into what is known as the Upper and Lower Valleys. The water which disappears in the upper portion here reappears in immense springs which are found both along the channel of Salt River and in the valley at considerable distances away. In order to avoid the excessive loss, the tendency has been recently to take out ditches at the mouth of the canons before the water has an opportunity to sink These ditches are made shallow in order that the water-way may be entirely in the finer and more compact surface soil. The illustrations of this are seen in the ditches around Fairview.

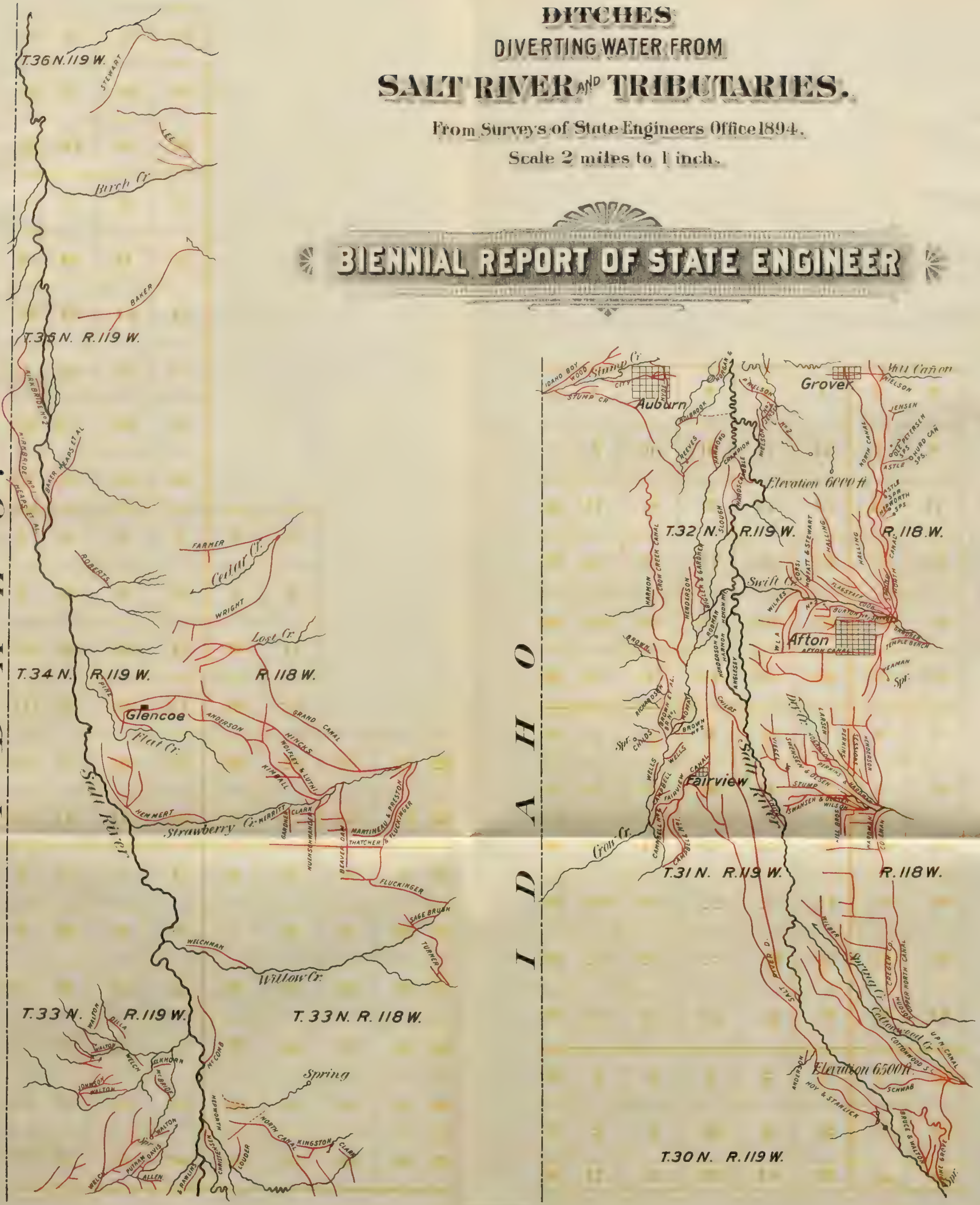
DUTY OF WATER.

The porous nature of the sub-soil makes it possible to use an excessive volume of water in the irrigation of this land with-

DITCHES
DIVERTING WATER FROM
SALT RIVER AND TRIBUTARIES.

From Surveys of State Engineers Office 1894.
Scale 2 miles to 1 inch.

BIENNIAL REPORT OF STATE ENGINEER



out the ill results noticeable elsewhere. In one case measurements showed that 12½ cubic feet per second were being continuously discharged upon 20 acres and yet it was all disappearing beneath the surface. In another instance measurement was made showing that 9 cubic feet were being run on 10 acres and had been, for several weeks, without being able to saturate the subsoil, all the water discharged from the ditch disappearing beneath the surface. This volume would in 30 days cover the surface to a depth of over fifty feet. There is no question but what the duty of water in much of this valley must always continue to be exceedingly low, although it will, in time, be very much higher than at present. The exceptionally abundant supply gives ample opportunity for what under other conditions would be a wasteful and extravagant use.

CHANGES IN NAMES OF STREAMS.

The names of the streams given on the map of the ditches in a number of instances are different from those given on the land office maps. The names given are those known to the settlers in that region. The stream marked on the land office map as Wagner Creek is known to the settlers as Cottonwood Creek; Red Creek is known as Dry Creek; Clear Creek as Swift Creek; Glacier Creek as Willow Creek; Smoking Creek as Stump Creek.

MINERAL SPRINGS.

Two interesting features in this region are the hot sulphur springs which are found on the plateau which separates the Upper and Lower Valley, and which are reported as having great medicinal value in the treatment of rheumatic and kindred diseases, and the salt springs found on Stump and Crow Creeks. The local supply of salt for the valley is obtained here. At one time the production of salt at these springs was an important industry, a large percentage of the salt used in smelting operations in Montana mining towns being obtained at this point.

With the construction of railroads this industry has, however, disappeared, except in the production of a supply for local use.

The maps of these surveys, prepared for use in the Engineer's office, are drawn on a scale of two inches to the mile. Reduced copies are prepared for the Water Commissioners and others. A few were lithographed and made a part of the report for 1892, and reduced copies of the maps of Clear Creek and tributaries, Prairie Dog, and Salt River and tributaries appear in this report. The expense of lithographing these maps stands in the way of printing the entire series but it is hoped in time to have this done.

The following is a list of the maps completed to date:

MAPS OF SURVEYS OF DITCHES

Made by the State Engineer between

1891 and Sept. 1, 1894.

No. of Map.	No. of Water Divisions.	Name of Stream.
1	1	Little Laramie and Tributaries.
2 & 3	“	Four Mile, Dutton and Cooper Creeks.
4 & 5	“	Little Laramie River and Tributaries.
6 & 7	“	Pass Creek and Tributaries.
8 & 9	“	North Platte River and Tributaries.
10	“	Jack and Spring Creeks.
11	“	Sage Creek.
12, 13, 14 & 15	“	Chugwater Creek and Tributaries.
16 & 16A	“	Lone Tree Creek and Tributaries.
17, 17A, 18 & 18A	“	Lodge Pole Creek.
19	“	Bates Creek and Tributaries.
20	2	Rock Creek and Tributaries.
21	“	Big and Little Goose Creeks.
22 & 23	“	Tongue River and Tributaries.
24	“	Big Goose Creek and Tributaries.
25	4	Fontenelle and La Barge Creeks.
26	2	Hewston, Benton and South Beaver Creeks.
27 & 28	3	Popo Agie River and Tributaries.
29	“	Beaver Creek and Twin Creek.
30	“	Little Popo Agie River and Tributaries.
31, 32 & 33	1	Snake River and Tributaries.
34	“	Separation, Muddy and Tributaries.
35	“	Horse Shoe Creek.
36	“	Muddy, Dry Muddy and Claud Creeks.
37	“	Elkhorn, Garden, Squaw and Loomis Creeks.
38, 39 40 & 41	2	Clear Creek and Tributaries.
42 & 43	2	Prairie Dog Creek and Tributaries.
44, 45 & 46	“	Belle Fourche River and Tributaries.
47 & 48	“	Sundance Creek and Tributaries.
49	“	Inyan Kara and Tributaries.
50 & 51	“	Stockade Beaver Creek and Tributaries.
52 & 53	“	Running Water Creek.
54 & 55	1	Rawhide Creek and Tributaries.
56	“	Muddy Creek.
57 & 58	4	Salt River and Tributaries.

REPORT OF M. C. McFARLANE,

ASSISTANT STATE ENGINEER.

Elwood Mead,
    State Engineer.

Dear Sir:

Herewith respectfully submitted report of field work done in connection with State Engineer's office during the seasons of 1893 and 1894.

M. C. McFarlane,
Assistant.

During 1893, a survey was made of the ditches taking water from Clear Creek and tributaries, Belle Fourche River and tributaries, Stockade Beaver, Rawhide and Muddy Creeks, the latter creek in the south-east of Laramie County. Work was commenced in the early part of June on Clear Creek, at the City of Buffalo. This stream, as well as its tributaries, receives its water supply from the eastern slope of the Big Horn mountains. As the stream has a big fall, its banks being low, there is no difficulty in the way of diverting water. The valley varies from half a mile to one mile in width except in the neighborhood of Buffalo, where a rolling tract of country extends about five miles to the south of the city and is watered from the ditches taken out near Ft. McKinney.

Immediately below Buffalo French Creek comes in from the left. From the mouth of this creek to where irrigation begins is about seven miles. The valley is from a quarter to half a mile wide. In the upper part of the valley several laterals cross the divide to water land in Johnson Creek valley. There are twelve ditches on this stream with a total length of thirty-four miles. There are over 4,000 acres under ditch but only about 800 acres irrigated, which includes the native hay meadow; the remainder is in its primitive state, overgrown with sage brush. After the spring freshet is over French Creek in itself supplies but little water, but Clear Creek is tapped about 15 miles west of Buffalo. This contributory ditch furnishes ample water for all the irrigation that is done on the stream. At the time of measurement it was carrying 78 cubic feet per second.

About 1½ miles below the mouth of French Creek, Clear Creek receives Rock Creek from the west. This stream, which was surveyed in 1891, is fully appropriated so that during the irrigation season it is dry or nearly so at its mouth.

From the mouth of Rock Creek the course of Clear Creek is north-easterly. It hugs the west side of the valley for a distance, but at the head of the LX ditch it takes to the east side of the valley and keeps that side in great measure for the rest of its course, all the ditches being taken from the west side. About 17 miles below Buffalo, Clear Creek receives its chief tributary, Piney Creek. This latter stream has about one-third larger volume than Clear Creek, and on June 24th, 1893, at its mouth was carrying 40 cubic feet per second. About 21 miles below the mouth of Piney Creek irrigation ceases, as the valley narrows up and the banks of the stream become steep and rugged. There are 23 ditches on Clear Creek with a total length of 102 miles. The acreage under ditch is 19,450, of which scarcely 5,000 are irrigated. To survey Clear and French Creeks took 14 days, and when the lowest ditch was surveyed, June 28th, there was still considerable water left in the stream so that all parties up to said date had a surplus of water.

Piney Creek was surveyed from the mouth towards the head. About 3½ miles from its mouth it receives Box Elder Creek from the south. Box Elder is fed from springs, but the water supply is scant. There are 7 ditches, total length 88 miles. Acreage under ditch 1,200. Several of the ditches are abandoned and the forsaken ranches give the country a forbidding aspect.

From the forks of Big and Little Piney to Clear Creek is about 16 miles. The valley varies from one-fourth to one-half mile in width, the stream meandering from side to side, its general course being north-easterly and easterly. Between Big and Little Piney is a stretch of excellent bench land over 800 acres in extent. Just below the forks is that famous ranch which produced 970 bushels of potatoes to one acre and at the rate of over 1,000 bushels from one-fourth acre which is a good index of the kind of soil and production of this valley. About 5½ miles above the forks, Big Piney again forks into North and Middle Piney of which the latter is the main stream. From this point to the head of the highest ditch is about 3 miles. The North Fork is drained dry by the Coffeen, Sherman & Wood, and Prairie Dog Ditches. The two latter are extended and draw largely from Big Piney. These ditches water land to the north of the divide, the Coffeen going over towards Little Goose Creek, the Sherman & Wood and Prairie Dog being tunneled through the ridge (the former tunnel about 300 feet long) and watering land in Prairie Dog valley. The Prairie Dog Ditch divides right at the mouth of the tunnel, the Massacre Hill branch following the northern slope of the divide, at length ramifies, the different laterals being turned loose and permitted to follow the natural channels making towards Prairie Dog valley. But the main branch of Prairie Dog Ditch from the mouth of the tunnel makes its way promiscuously down an incline of 25 degrees. The view is picturesque--the hill-side has been cut deep by the descending torrent and rocks, stones and mounds confusedly hurled together at the bottom. The Sherman & Wood is similar in character and appearance. After leaving the tunnel it passes down a chute and thence into a ditch which soon takes a haphazard course making a channel for itself over 20 feet deep, again to be picked up by a ditch after a course of over one mile without anything to stay its work of devastation. By the time the Coffeen ditch gets to the land it is intended to irrigate it is almost dry, resulting from the poor construction of the ditch. Were one to travel the whole State over he would not find a worse torn up or dilapidated piece of country than the southern portion of Prairie Dog valley resulting from the poorly constructed ditches. Besides, there is a great waste of water which might be profitably used elsewhere. These three ditches, at the time of the survey, July 12th, were drawing from Piney Creek 81.3 cubic feet per second. Prairie Dog Creek depends almost entirely upon these ditches for its water supply which is again taken out in numerous laterals. With what is constructed, partly constructed and projected, there are over 90 miles of ditches on Prairie Dog.

Returning to the Little Piney, this stream as it rises in the foot-hills soon exhausts itself, gauging 6¼ cubic feet per second on the 8th of July. It is supplied from the Big Piney through the Piney Divide Ditch, which ditch in addition to watering the table land to the north of Little Piney, includes a large tract of country to the south extending as far as Shell Creek valley.

The waters of Bear Gulch and J. A. Creeks, tributary to Little Piney, are all appropriated before they reach the main stream. These creeks are fed from springs in the foot-hills. There are fifty ditches on Piney and its branches with a total length of 120 miles. The acreage under ditch is 10,300, with about 4,500 acres irrigated.

To the south of Little Piney Creek is Shell Creek which drains into Lake De Smet, an alkaline sheet of water 1,500 acres in extent. This stream is of little account for irrigation being fed from small springs of intermittent character. There are 7 ditches with a total length of 7.8 miles. There are about 160 acres under irrigation. This finished the survey of Clear Creek and its tributaries on July 18th. During this period several gaugings of Clear Creek were made. Piney at its maximum carries over 1,300 cubic feet per second.

Throughout the Clear Creek region good irrigators are the exception. Great stretches of the bottom land are held by non-residents whose agricultural efforts are limited in great measure to the irrigation of native hay, and that grows only in such places as the sage brush has yielded its lease. A great extent of ditch bears no evidence of having ever been used for beneficial purposes. In many cases it is now difficult to trace the course of unused ditches, merely a scratch through the sage brush, deep ravines crossing their tracks but no flumes. To permit such ditches and the sage brush land below them to receive appropriations on the same terms as the cultivated land of the industrious and practical irrigator is a great injustice, but it sometimes happens because of the dislike of the latter to contest unfair claims. In many cases the Division Superintendent has no check except the map prepared by the State Engineer, and it is a question whether it would not be well to have it show the tracts of cultivated land.

By way of Buffalo and the old Gillette stage road the Belle Fourche was reached at Moorcroft. Crazy Woman was dry, while Powder River gauged 66 cubic feet per second. With the exception of a couple of muddy alkaline springs, Powder River was the only water between Buffalo and Gillette. The heat was excessive. On the divide between to the east of Powder River and towards the head of Wild Horse Creek the grass was excellent and considerable hay had been cut, considering the uncom-

WHERE THE WATER IS STORED

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monly dry season. This speaks well for the capabilities of the region for grazing, the scarcity of water being the great drawback. Going down the Belle Fourche from Moorcroft there was no running water, only pools here and there. There was only one ditch surveyed on this stream, the Millar Irrigating Ditch, 10¼ miles long including branches. This ditch, said to have cost $20,000, was in a state practically useless. A large dam at the head was undermined, flumes out of repair, the ditch washed out in many places by freshets and the stream supplying no water when most required. There are several other large abandoned ditches on this stream.

Inyan Kara Creek, a tributary of the Belle Fourche, on the 27th of July was carrying at its mouth one-half cubic foot per second. This stream, with its tributaries, Hewston, Beaver and Benton Creeks, is fed from small springs. There were 12 ditches surveyed on these streams with a total length of 14.8 miles. The acreage irrigated is about 700.

Sundance and Redwater Creeks have a poor supply of water, little irrigation being done in this section of the country. Although there were 11 ditches surveyed, several of them were abandoned. At the junction of Sand Creek with the aforementioned creek is the town of Beulah. Sand Creek, fed from a large spring, gauged 53 cubic feet per second on July 25th, but there is little opportunity to use its waters until it gets over into Dakota.

Crossing from Beulah back to the Belle Fourche valley are a few small streams contributing their quota of ditches—Beaver, Lytle, Black Tail and Miller Creeks. But in the whole of Crook County the water that is at service is but poorly handled, the people not being thoroughly awakened to the benefits to be derived from what is at hand, irrigation not being a necessity in previous seasons, this corner of the State being favored with considerable rainfall.

Leaving Crook County and going southward into the eastern part of Weston County there are Oil, Skull and Stockade Beaver irrigating streams. The two former were dry at time of survey, August 5th, but the native hay crop was a good yield. Excepting garden stuff this is the only produce. The ditches include large tracts of sage brush but there is no effort being made to reclaim the land. There is no scarcity of water until the end of June. There were 13 ditches surveyed with a total length of 17 miles. There are over 1,000 acres under ditch, about 300 irrigated.

The Stockade Beaver a beautiful little stream in the eastern part of the county, flows almost directly south and is dependent upon numerous little springs on the slope of the range to the east. The valley is narrow. Twenty-one ditches were surveyed, length 25 miles. There were over 3,000 acres under ditch, about 1,000 irrigated with ample supply of water for the land improved. Wheat, oats, potatoes, alfalfa and corn are cultivated to advantage on this stream. The L. A. K. is a tidy little ranch and produces as good a quality of grain as is to be had in the State. August 8th the creek gauged 16 cubic feet per second above the L. A. K. ranch.

From the Beaver south is a dreary waste, comprising alkali flats, almost destitute of grass, water a scarce commodity, and of poor quality. The bed of the Cheyenne river was a dry sandbar. Continuing southward by way of Lusk and crossing the divide into the North Platte basin at the head of Rawhide Creek work was again resumed. The soil of the valley is of a sandy nature, the stream alternately rising and sinking, there being intervals of two or three miles of dry channel in places. The chief produce is native hay and alfalfa. There are 18 ditches including an area of 3,450 acres with about 700 acres irrigated. There is a great length of ditch passing through sand and sage brush without any evident purpose, as there is no water to fill it. The water supply is meagre throughout.

The field work for the season of 1893 closed with the survey of Muddy Creek. This stream consists of a series of springs which rise right in the bed of the creek throughout its length. There are 12 ditches. There seems to be water sufficient for the extent irrigated. The chief product is hay.

The field work of 1894 comprised the survey of Running Water Creek, the gauging of rating flumes on Horse Shoe, Little Goose and Wolf Creeks, the gauging of numerous streams, and, lastly, the survey of Salt River and tributaries.

Running Water was surveyed in early May. Its general course is easterly, and as to the rising and sinking of its waters it is similar to the Rawhide with this difference, that as you go down stream you find the volume of water steadily increasing while the Rawhide is completely dry for quite a distance from its mouth. For the sake of euphony the tributary of Running Water from the north is called L'Eau Qui Court. At the juncture of the two streams some sub-irrigation is done, several dams being thrown across the stream. There are 18 ditches on the stream, 18.5 miles in length, with about 360 acres irrigated. A number of the above ditches are apparently abandoned.

Towards the end of May the flumes on Horse Shoe Creek were rated. Of the 26 ditches on this creek 21 had rating flumes, although several of these were scarcely worthy of the name, being made of miserable, rotten, shaky inch lumber and lining only, without wings or apron to prevent the water from washing around or under the flume. Several parties who had put in regulation flumes were much exercised that the above excuses should be accepted. To try to reason with them by showing that such flimsy structures were the most expensive on account of constantly requiring repairs, not to mention the risk of being washed out at the time water was most needed and probably have their head-gates shut down—all in vain. The only way to have justice meted out was to make each put in a standard flume. Here was a case of the irrigator laying down the law and perhaps with a shade of reason in it.

A few of the flumes could not be rated as the bottom of the flume in some cases was half a foot below the grade of the ditch; in fact, a good rating was had on but a limited number. Among the causes for this result may be noted the location of the flume in a sharp bend of the ditch, below the grade of the ditch, on a steep grade, in one case 10 per cent., at the mouth of ponds or expansions in the ditch or a combination of the above. All these are detrimental to obtaining reliable results, the width of flume being greatly in excess of that of the ditch or vice versa, the ditch itself being irregular in section and grade with accumulations of weeds and debris. Each one of these is a factor for poor results. According to instructions a flume should not exceed 800 feet from the head-gate. In many cases it was about half a mile. This was a great inconvenience to the gauger.

On Little Goose Creek only 5 of the appropriators had complied with the request to put in flumes. On Wolf Creek, 7. Among excuses for flumes not being in were ignorance of the manner of construction, doubts as to the utility or necessity, the pressure of the irrigation season not giving time for construction. By another season these objections should be without foundation and irrigators should realize the benefits of such a division of water. The work done in this line has not been satisfactory, the results obtained not being trustworthy for permanent record. But as this is a new feature in the irrigation of Wyoming, people are naturally jealous of the innovation and have to be educated to it and if the thin end of the wedge has been inserted the work is not lost. In this matter the intelligent Water Commissioner might be of much service in choosing proper sites for flumes and instructing the ignorant in their construction and the necessary requirements of the ditches. All this could be done in his general round of inspection without taking additional time. In brief, the only way to bring this difficulty to an end is to accept no flume which is not of serviceable character and in proper location and the ditch in good shape. After a rating flume has been gauged in proper shape there will be an incentive to keep ditches cleared and in repair as this will be the only means of obtaining the appropriation to which the ditch is entitled, it being determined by a certain depth of water in the flume. If there are any obstacles in the ditch the volume of water for such depth would be lessened. Head-gates will also need attention. They should be so constructed as to be easily raised and lowered and when shut down should dry the ditch completely. The general remarks on the head-gates viewed were: Poor in construction, opened and closed with greatest difficulty, when shut down lessened the flow of the water but a trifle.

From Wolf Creek by way of Big Horn mountains, Ft. Washakie, South Pass City and Thompson Pass, Star Valley was reached. The principal streams crossed were gauged, the results being given in the table of stream gaugings. The trail from South Pass takes an almost due west course to Green River and crosses the Sweetwater, Little and Big Sandy Creeks near where they leave the mountains. It passes over a fine tract of grass land. Great flocks of sheep from Oregon and other western parts follow this route to the eastern markets and their journey is not hasty over these rich grassy slopes and tablelands. At South Pass City we were told that there was a very poor prospect for feed to the west Our team fared tolerably well across the plains to Green River. For the remainder of the way every vestige of grass was gone. Good mountain water and a scant supply of oats held life in the ponies till we arrived at Afton, the metropolis of the valley.

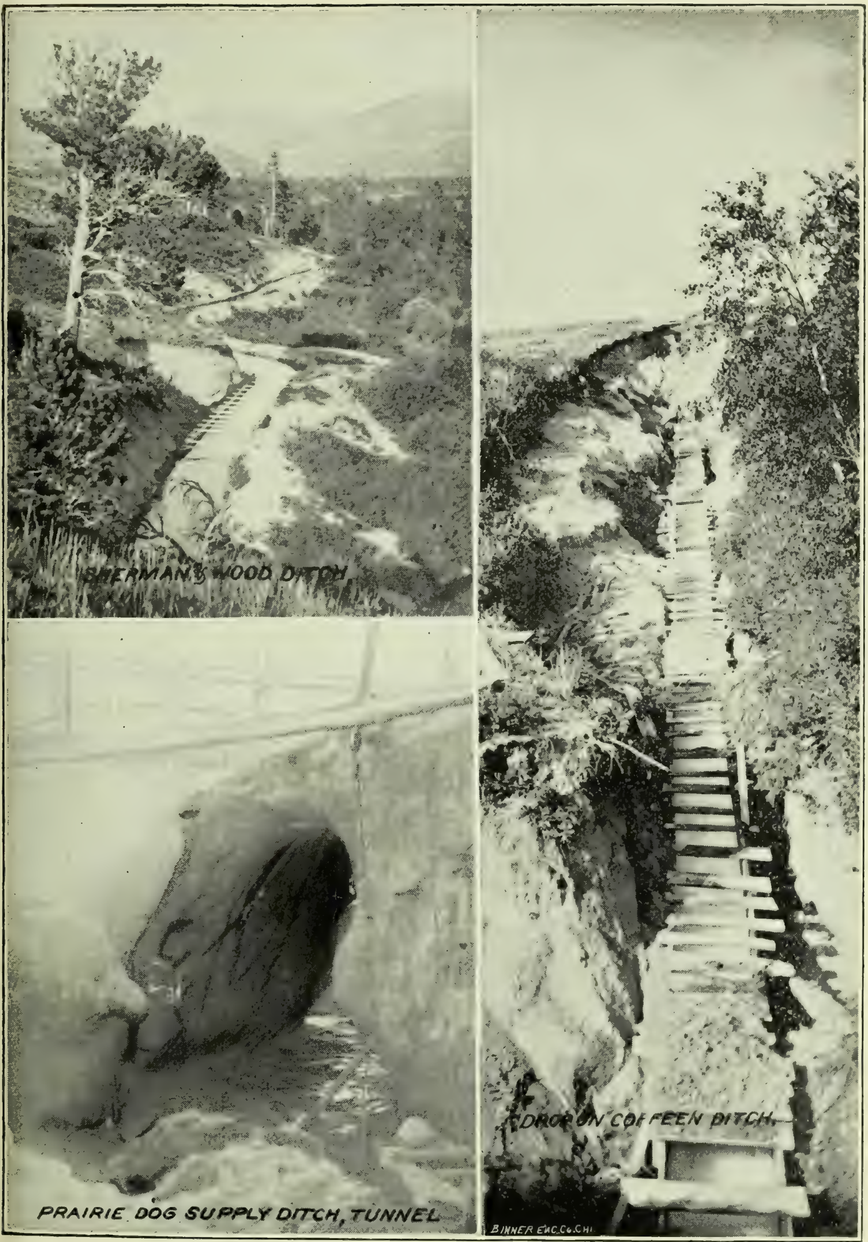
Salt River Valley is enclosed by two ranges of mountains running almost north and south. Midway down the valley the western range swerves slightly to the east and a spur from the eatern range meets it. Through this Salt River has cut its way. This pass is about four miles long. The eastern spur is split by

Willow Creek. Below the mouth of Strawberry Creek the valley again widens out. At Glencoe it is about 3 miles wide, the river skirting the western slope until near Freedom, it continues its northern course, but the mountains make a detour westward. The upper and lower valleys included, have a length of about 40 miles from the head of irrigation to where Salt River empties into the Snake. In the upper valley Salt River occupies about the center. The chief drainage is from the eastern range —from which come Salt River, Cottonwood, Dry and Swift Creeks, while from the west there are Crow and Stump Creeks. These streams have their maximum flow when most needed for irrigation. Cottonwood Creek and a small creek north of it, Spring Creek, have a north-easterly course. There are 5 ditches tapping Cottonwood and one from Spring Creek. The Upper Canal while constructed from Cottonwood is using Spring Creek water at present. The area included under this ditch is about 4,500 acres with nearly 2,000 acres irrigated. There are 22 miles of ditch. There is a small spring creek south of Cottonwood called Pine Grove Creek from which one ditch is taken. Cottonwood Creek gauged 79 cubic feet per second, Spring Creek 5 cubic feet, on August 25th. Both of these creeks were drained dry by the ditches. There was no scarcity of water for the land irrigated. The next stream, going down the eastern side of the valley, is Dry Creek, which gauged 56 cubic feet per second August 21st. There are 12 ditches taken from this stream,length 23.7 miles. There are about 3,000 acres under ditch, probably 1,000 irrigated. The ditches branch out both north and south, those to the south meeting Cottonwood ditches and those to the north laterals from Afton Canal. The land on this creek in many places has been ove-rirrigated, the loam being washed out leaving little behind but cobble stones and coarse gravel. Swift Creek, the next in order, has over 5,000 acres under ditches with about 1,800 irrigated. There are two large ditches taken out of this stream, the Afton and the North.

There are several little spring creeks to the east of North Canal, Hanson, Phillips, Mill Canon and Hurd Canon Creeks. There are eight ditches from these springs and 16 from Swift Creek, total length of ditch 48.2 miles. Swift Creek gauged 155 cubic feet per second on August 10th. It was almost dry at the lowest head-gate. On the west side of Salt River, just below the mouth of Swift Creek, is Crow Creek. The general course of this creek is north-easterly and north and is the first stream to supply Salt River with water throughout the year. The finest grain in the valley is grown on this creek.

There is a marked difference in the soil of the west side of the valley from the east. In the east there is a gravelly soil covering a bed of cobble stones and boulders of great depth. Some of the wells are 100 feet deep and still are in this boulder formation with occasionally streaks of clay; on the west side of the valley there is a large percentage of clay. It is claimed that a good quality of brick can be made in the vicinity of Fairview, Crow Creek. Spring Creek is tributary to Crow Creek on the South. There are 28 ditches on Crow Creek including spring ditches to the west of Crow Creek Canal. The country to the north of Crow Creek is an immense meadow of native hay which is watered from Crow Creek chiefly through sloughs. This country bears evidence that it receives too much water as the bottoms are being covered with a thick growth of moss, giving a swampy appearance. To the north of Crow Creek is Stump, Tom's Canon and Sulphur Creeks and Sulphur Springs slough. The area drained by these streams contains 21 ditches about 20 miles in length. On the west side of Salt River there are about 8,000 acres irrigated, chiefly hay land, except in and around Fairview and Auburn, the latter on Stump Creek. From the Salt River, and the sloughs in connection with it, there are 20 ditches in the upper valley. At the upper end of the valley this stream carries little water except at the time of freshets. Below the head of the Salt River Ditch it is entirely dry for a distance of 10 miles. In the region of the mouth of Crow Creek there are some large springs. These with the water received from Crow Creek make the stream soon assume the proportions of a river. It continues increasing in volume until it reaches the pass. It was gauged in the pass above Willow Creek; carrying over 600 feet on August 4th. The same date Willow Creek at its mouth gauged 103 feet.

The chief irrigating stream in the north valley is Strawberry Creek. There are nearly 5,000 acres under ditch with 1,000 irrigated. There are 11 ditches on the stream and one abandoned ditch. To the south is Dry Canon Creek, and Willow Creek, 4 ditches, 160 acres irrigated. North of Strawberry there are Lost, Cedar, Birch and several other streams which sink in the gravel and boulders almost as soon as they leave the mountains. North of the area covered by Strawberry ditches, there is little irrigation done but this section can be all watered from Salt River. There are only 4 ditches from Salt River, two of which cross into Idaho. A peculiarity of the streams of Star Valley is that the detritus brought down from the canons keeps accumulating on the sides and bottom until the streams are running on ridges. Any slight obstacle is sufficient to change the course of the stream. From the mouths of some of the canons there are a number of those ridges or dry channels branching out. Where the ditch crosses these gravelly beds the water is apt to sink. The first season ground is irrigated it takes a large quantity of water. It was stated that when water was first turned into the Kirkbridge No. 1 Ditch it only got one-fourth mile from the headgate. This ditch now gauges 70 cubic feet per second, but for the first season it all sank in the sand. The loss from seepage is now inappreciable, so with the other ditches of the valley; excepting Cedar Creek and here the ditch runs on top of a gravel bed. There is such an abundant supply of water that people are tempted to use more than is beneficial.



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Owing to the limited appropriation for this work and the extensive territory to be covered it has been necessary to exercise the closest economy in its prosecution. To carry a complete camp equipment was out of the question and the lack of this has made it necessary to depend largely upon the hospitality of the farmers for whom the work was being done. The inconvenience of this was recognized in all cases, but in nearly every instance there was no lack of courtesy and generous welcome.

To all is made this apology for any inconvenience which resulted therefrom and the hope is expressed that the results have fully compensated therefor. It was only by economy that the work laid out could be completed and from its exercise the public and not the Assistant Engineer is the gainer.

STATE BOARD OF CONTROL.

Progress in Determining Rights to Water in 1893 and 1894. Changes in Membership. Some Water Right Problems.

In 1893, Division No. 2 was the principal field of the Board's labors. In 1894, Division No. 4 has received the most attention. Proof of appropriations of water, was taken by the Superintendent of Division No. 2, in 1893, on Clear Creek and tributaries, Belle Fourche and tributaries, and some of the tributaries of Cheyenne River, in Division No. 1 on Rawhide Creek, a tributary of the North Platte.

In 1894, rights to water have been determined on Niobrara River, in Division No. 2, and Muddy Creek in Division No. 1, and proof of appropriations received by the Superintendent of Division No. 4 on La Barge Creek and Salt River and tributaries. The final determination of rights on Clear Creek and tributaries has been delayed by a number of contested cases. It is expected that these will be completed and the evidence submitted to the Board of Control at the next meeting.

The work of the Board has been free from many of the embarrassments and complications which surrounded the beginning of its work. The experience of its members and the better understanding of appropriators of the methods and purposes of the Board has contributed to this end. During the present year there has not been an appeal from its decisions although rights to water, of great and increasing value, have been established in seven counties and in three Water Divisions.

The only recourse to the courts found necessary was by an appropriator who did not appear on the records of this office as a claimant of water and who failed to learn of the determination of rights in time to appear before the Board. The law contains no provision by which the Board can correct omissions of this character.

CHANGES IN MEMBERSHIP.

Two members of the Board have resigned since the last report. The Superintendent of Division No. 2, W. J. Clarke, resigned because of removal from that Division. The Superintendent of No. 4 resigned upon being nominated for presidential elector in 1892. The vacancies were filled by the appointment of Jack Dow as Superintendent of Division No. 2 and A. D. Chamberlin of Division No. 4. The Superintendent of Division No. 1 was absent from this State for the greater part of 1893, his place being acceptably filled by E. S. Johnston, his deputy during that time.

SOME WATER RIGHT PROBLEMS.

From the nature of the subject no water law can be framed nor system of administration be devised which will fully protect the rights of appropriators under all conditions. Nor can subsequent legislation remove the complications created by lack of supervision in diverting water in the first place.

The aim of the Board of Control has been to make the principles which govern the appropriations of water as definite and specific as possible and to adhere to those general principles in all cases. This is necessary both to secure justice between users of water from the stream and to give stability and security to rights when once established.

The aim has also been to define rights in such a way as to leave no uncertainty as to their limitations and extent. This has been done as much for the protection of appropriators as for the public. Any uncertainty in a water right is as injurious to its value as a defect in a land title, and it is more dangerous to the public. The difficulty is to draw the line between adequate protection to the appropriator and preservation of the rights of the public. To do this involves to many a new conception of property rights, few being able to conceive of any interest in water short of absolute ownership, which the Board is not disposed to sanction.

The questions which have arisen to perplex the Board have been of two classes, those growing out of inadequate supervision and control over the location and building of ditches and those arising out of the assumption of property rights in water which the Board believes should never be recognized. A few of each will be mentioned.

APPROPRIATORS OF MEDICINAL SPRINGS.

On Dec. 31st, 1892, an application was filed in the State Engineer's office for permit to divert and appropriate the water of a hot spring, having medicinal virtues. The uses of the water stated in the application were to be agricultural, domestic and medicinal. The spring rises in the channel of the North Platte River within the limits of the town of Saratoga, the land being owned at that time by Wm. H. Cadwell. Before any action had been taken by the State Engineer relative to the approval or rejection of the application, a protest against such approval was filed by Mr. Cadwell, the ground of the protest being that Mr. Cadwell was at that time the owner of the spring, the claim to ownership being based on the fact that title to the land on which the spring rose was acquired by him while Wyoming was a territory and before the provisions of the State Constitution went into effect. Being uncertain as to my jurisdiction in this matter the application was refused, and appeal taken to the Board of Control. Both parties appeared by counsel at this hearing, which was held at the Engineer's office on March 11th, 1893, and which resulted in the application being approved, the majority of the Board favoring such approval.

Since then a number of similar applications have been filed, and approved by the Engineer; the most important being those covering the Alcova Hot Springs near Casper, Wyoming, and the Shoshone Hot Springs near Cedar Mountain, on Shoshone River. The feature of this question, which has proved most difficult in this office, is whether it is the water or the mineral ingredients in the water which is of greatest value. In other words, whether such springs come under the provisions of the water laws or mineral laws. Acting under the precedent already established and acquiesced in thus far, such permits will continue to be issued until shown to be improper or illegal.

The entire Board of Control are of the opinion that there should be additional legislation on this subject. The medicinal value of these springs makes it desirable that they should be utilized, and that facilities should be provided for their use. Before any one will invest the money which their improvement requires he must have some assurance of protection in their control, while a permit under present water laws only gives the right to use. This fact is not fully understood and it would prevent litigation, and possible abuses, if there was a more specific procedure for the control and management of these springs. It is suggested that a law be enacted providing for the lease of these springs from the State for a period of ten years, the lease to specify the manner of use, charges, &c. Such provision would simplify the duty of this office and remove all doubts as to the legality of the "permit" when issued.

SEPARATE CERTIFICATES OF APPROPRIATION FOR EACH APPROPRIATOR.

In the first work of the Division Superintendents, taking testimony of appropriators, no attempt was made to segregate the lands of different individuals irrigating from the same ditch. Frequently a single officer of a ditch company submitted proof of all the land reclaimed under it. A single certificate would then be issued containing the names of all the appropriators and a description of all the land reclaimed, but a separate description of the land of each appropriator, and the volume of water to which he was individually entitled, was not designated. The Board acted on the belief that this matter would be harmoniously adjusted by the appropriators themselves afterwards. Experience has proven this not to be true. Requests were soon made for a separation by the Board of these joint certificates and where it was possible this was done. In some cases, however, the time had elapsed in which the Board felt authorized to change the form of certificates and the ones originally issued had to stand. Litigation has resulted in one instance, McPhail vs. Forney, from this ambiguity. To obviate this uncertainty the present practice is to require each appropriator of water, or his agent, to submit separate proof of the nature and extent of the use on which the claim to an appropriation is based. While this involves more work at the outset, the final results have proven far more satisfactory.

TIME OF HOLDING CONTESTS.

Section 24, of Chap. 8, Session Laws of 1890-91, should be amended. This section provides that any party desiring to contest any of the evidence submitted to the Superintendent of the Division in proof of appropriation of water shall be authorized to fix the time of holding such contests. This places the Division Superintendent and the parties whose statements are being contested at the mercy of any one desiring to delay the completion of the determination of rights. It also often results in inconvenience to the parties making the contest. Instances have arisen where they have fixed a time for such hearing when the duties of the Superintendent called him elsewhere, rendering it impossible for him to be present. One such hearing was fixed for the date fixed by law for the meeting of the Board of Control. The time of such contests should be fixed by the Division Superintendent and should be within a definite period after notice of the desire to contest being served upon him.

There are several other matters in Section 23 which require revision. The time in which contest proceedings can be instituted should be specifically stated. There is an uncertainty in regard to this as the law now stands.

A further amendment to Section 23 is desirable which will provide for the compulsory attendance of witnesses, and also authorize the Division Superintendent to call for additional evidence on his own motion where such additional evidence tends to a more complete establishment of the appropriator's rights.

SOME OF THE

UNUSED LAND AND WASTED WATER

OF THE STATE.

The purpose of the following pages is to show, in part, the location and extent of the neglected and unused agricultural opportunities of the State; to show where ditches can be built; the available water supply to fill them and the land which can be reclaimed. In doing this only the larger streams and the most extensive areas of land will be considered. It would require more space than the limits of this report will permit to deal with all of the opportunities for extending the reclaimed area.

The data submitted is the result of seven years' study. As opportunity has been presented streams have been measured and the lands which border them examined. Most of the statements made are based upon a personal examination of the localities described. Where this is not the case they are based upon the estimates and plans, filed with applications for permits for ditches, and on the reports of Engineers making surveys of these ditches.

As stream gaugings have been dependent upon more pressing duties, and as neither the time nor money, available for this work, has permitted its prosecution according to any systematic

BIG HORN RIVER

SNAKE RIVER

plan, some of the records are incomplete and some of the results can only be considered as close approximation. They can all, however, be relied upon as the latter. The same is true in regard to the estimates of the cost of reclaiming land. Nothing but complete detailed surveys will furnish the information required by settlers and investors; but the information herein given will serve to indicate to homeseekers the localities worthy of close examination.

NORTH PLATTE RIVER.

The drainage basin of this stream constitutes Water Division No. 1. It is one of the four principal streams of the State. The measurements of its discharge, which are given hereafter in the table of stream gaugings, were made at Douglas, Orin Junction, Hartville and Ft. Laramie. The daily record of the height of the stream was kept at Douglas. As there are no important tributaries between the points above mentioned, the results of the different gaugings have shown a close agreement and by their comparison and combination it was possible to make a table of discharges for different depths having a close approximation to the truth. The accompanying diagram shows both the yearly and monthly fluctuations for the past four years, and the monthly mean for each year. It will be seen that there is a wide variation in flood discharge for the various years, but a close agreement in the discharges for the later months of the irrigation season. The maximum daily discharge in the four years ending June 16th, 1893, was 15,747 second feet. The minimum, Sept. 25th, 1892, 640 second feet.

AREA OF LAND WHICH CAN BE SERVED.

The economic question is what area will the water of this stream reclaim? This cannot be answered conclusively. It will depend somewhat on the character of the crops, and whether or not the fluctuation in discharge for the different months of the irrigation season agrees with their requirements. On most streams this is not the case. There is a surplus of water in June and a scarcity in August, but owing to the fact that the North Platte has its source among the highest peaks of the Rockies, its August discharge is far greater than that of most streams of the arid region. As the tendency of irrigation is to increase the volume of water in the latter part of the season, it is believed that ultimately the discharge of this stream, where it passes through the country most valuable for irrigation, will correspond closely with the requirements of crops.

The unit employed in measuring the discharge of streams is the cubic foot per second. The duty of water, when expressed in this unit, is the acres of land which a constant flow of one cubic foot per second will irrigate. As this assumes a condition of affairs which does not exist in practice, the use of water not being either constant or uniform for the different months of the irrigation season,a duty thus expressed may be very misleading. A better way to express the duty of water is by the depth of water needed to be spread upon the land during the season, regardless of the rate or time of distribution. There is as yet but little direct information on the subject, but from the measurements made by this office, those of the State University of Wyoming and the State Agricultural College of Colorado, (Bulletin 22), it is believed that a layer of water over the entire irrigated surface one and one-half feet deep, exclusive of rainfall, is ample for watering of the crops grown on the land under discussion.

The daily records of the discharge embrace the entire irrigation season for only two years, 1891 and 1894. As these were the years of least water supply they may be safely taken, as they were below the average. Converting the discharge in second feet into acre feet the discharge for 1891 and 1894 is as follows:

	1891.		1894.	
MONTH.	AV. DIS. SEC. FT.	TOTAL ACRE FT.	AV. DIS. SEC. FT.	TOTAL ACRE FT.
May	7,213	442,746	8,087	496,403
June	7,672	455,700	8,670	514,980
July	2,576	158,100	2,617	160,239
August	879	53,940	879	54,167
Sept.	724	43,056	791	47,044
Totals........		1,153,542		1,272,823

Dividing the total number of acre feet in the discharge for the season of 1891 by the depth of water required for irrigation —one and one half—gives approximately 770,000 acres as the area which the stream would have irrigated. Dividing the total for the season of 1894 by the estimated depth of water required for irrigation gives 848,548 as the acreage which the stream would have watered the present year.

There are only three large areas, along this stream; known to be susceptible of irrigation. The narrow valley, along its entire length, contains small tracts of excellent land which can be reclaimed, although the cost of such reclamation will, as a rule, be high. This is due to the slight fall of the stream and the high banks which border it. Of the 38 "Applications for Permits" only three contemplate the reclamation of over 10,000 acres.

GOSHEN HOLE.

The last application to be filed is for a permit for the "Goshen Canal" which is intended to reclaim part of what is known as Goshen Hole, so called because the valley is depressed several hundred feet below the surrounding country. The map of this canal, facing page 132, shows its location and the land intended to be reclaimed thereby. The completion of this work would be of great value to the State on account of the favoring climatic conditions, the superior excellence of the soil and the contour of the surface which is admirably adapted to the distribution of water. The altitude varies from 4,000 to 4,500 feet above sea level, being the lowest body of irrigable land in the southern half of the State. Length of canal 70 miles; estimated cost $2,000,000 or about $15 per acre for the land reclaimed.

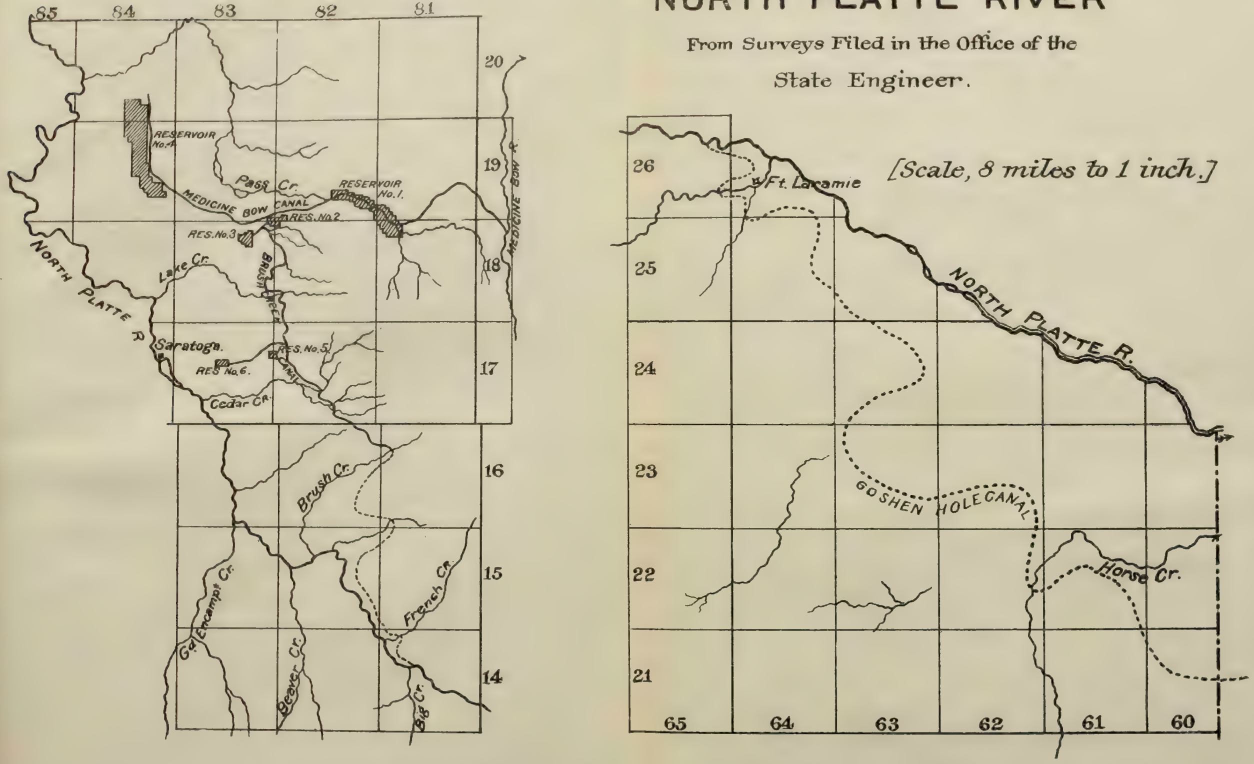
UPPER PLATTE VALLEY.

South of the Union Pacific Railway, at Ft. Steele, and between that point and the southern boundary of the State is what is known as the Upper Platte Valley. It is about 40 miles long with an average width of four miles on the east side of the river and a varying width of from one to three miles on the west. A survey has been made for a canal system to water the eastern portion. It embraces two ditches, one taking water from Brush Creek, the other diverting the tributaries of the Medicine Bow into Pass Creek from which stream it would be turned into the extension of the Brush Creek Canal. The extension of this canal system to the North Platte River was also contemplated as an ultimate step. It will have to be done if the lands are ever fully reclaimed as the unappropriated water supply of the two streams before named is inadequate. The applications for these two canals were filed in April, 1891, and expired in May, 1894, the projectors having been unable to secure the money for their construction. The estimated cost, exclusive of the extension to the North Platte, was about $100,000 with 84,000 acres to be watered. This estimate did not include laterals, and from the portion of the canal line which has been examined it is believed to have been too low.

While the greater part of the canal line passes through a country offering no serious obstacles to its construction, the portion between Brush Creek and Cedar Creek would have to cross a broken country which would involve the moving of a large amount of surplus material and, in some cases, expensive construction to make the canal a safe one. The same would be true of the extension from Brush Creek to the Platte River. From a

MAP SHOWING PROJECTED CANALS FROM NORTH PLATTE RIVER

From Surveys Filed in the Office of the State Engineer.



[Scale, 8 miles to 1 inch.]

number of visits to this region and a somewhat careful inspection of the country, through which this canal must pass, it is not believed that an adequate water supply can be provided for this land for less than $10 per acre. The land to be reclaimed is in part within the grant of the Union Pacific Railway, and it is understood that the railway lands have passed into private hands. The soil is excellent, as is shown by the character of the crops grown on the irrigated lands along the streams which empty into the Platte. There is but a small portion of the country so rough as to be unfit for irrigation, the greater part having an excellent surface for the distribution of water. The average elevation is about 6,500 feet above sea level.

West of the river there are several extensive tracts of irrigable land which await reclamation. These can be most cheaply watered from the tributaries of the Platte, Grand Encampment, Beaver and Spring Creeks. While no surveys have been filed to show the extent of these areas the aggregate would form a material increase to the land now under ditches from these streams.

WYOMING CENTRAL CANAL.

Another extensive project for which a "Permit" has been issued is the Wyoming Central Canal. It was projected to divert water from the North Platte River about fifteen miles west of Casper to reclaim the table lands north of the river for a distance of 150 miles. The survey of this canal was completed for about 130 miles when work was suspended and has not been resumed. The area embraced under the surveyed portion is about 200,000 acres, the estimated cost being $2,000,000, making the estimated cost about $10 per acre. The permit for this canal expires April 1st, 1897.

While the climatic conditions, the water supply and the character of most of the land to be reclaimed by this canal, make it an important project, the portion of the line which I have examined presents such obstacles to its construction that it is questionable whether the present value of irrigated land will justify the attempt. This much is certainly true; in its magnitude, in the area of land reclaimed and in its engineering features it will be one of the notable achievements of the arid region.

The aggregate acreage under the remainder of the completed and projected canals and ditches to take water from this stream will not reach 100,000 acres. They embrace substantially all the opportunities for extending the reclaimed area along its course. This makes the possible total:

Upper Platte Valley	100,000	acres
Middle Section	300,000	"
Lower Section, Goshen Hole, &c	150,000	"
Total	550,000	"

In the table giving the discharge of this stream the water of its principal tributary, the Laramie, has not been included as it empties into the Platte below the point where gauged. The measured discharge of this stream in June last at a point below all ditches diverting water was 1,800 cubic feet per second. Taking this into account, and the fact that the reclamation of 200,000 acres of the above area is dependent upon more favorable conditions than now obtained, and considering the percentage of water which will be returned to the stream as seepage, it is probably within the truth to say that when all the irrigable land along this stream has been reclaimed as much of its water will flow beyond our borders as is absorbed within the State.

THE LARAMIE RIVER.

The records of the Engineer's office show claims to water from the Laramie, under Territorial Laws, for 53 ditches, the total acreage described as under these ditches being 150,000. In addition 22 applications for permits have been filed under State Laws. Some of these ditches have not been built, and some of those for which permits have been issued will probably not be built, but making a deduction for the difference between the claims and the actual appropriations there can scarcely be a question but what the recorded ditches, when constructed and used to their capacity, will divert the entire stream. The map facing page 136 shows the largest of the projected and completed canals and the areas which they are intended to reclaim.

For several years a record was kept of the discharge of this stream, the gauging station being at Wood's Landing about 30 miles above Laramie City. The results of this record are shown in the diagram facing page 136. As was done in the case of the North Platte River the discharges have been converted into acre feet and the totals used to determine the acreage the stream will serve. The results show a wide variation between the different seasons, this being due to the fact that the season of 1889 marked the lowest stage of water on record in nearly all the streams of the State. The average total for the irrigation season, May 1st to Oct. 1st, was 157,730 acre feet.

	1889.		1890.		1891.	
	AV. DIS.	TOTAL	AV. DIS.	TOTAL	AV. DIS	TOTAL
MONTH.	SEC. FT.	ACRE FT.	SEC. FT.	ACRE FT.	SEC. FT.	ACRE FT.
May	579 2	35,558	914 9	56,157	880 1	54,014
June	904 6	53,730	981 3	58,287	1,136 6	66,831
July	283 7	17,409	378 3	23,219	531 5	32,621
August	138 2	8,481	189 3	11,619	267 7	16,427
Sept.	62 3	3,699	82 4	4,890	161 6	9,591
		118,887		154,172		179,484

The character of the soil on the Laramie plains and along the lower portion of the stream is such that the probable duty of water will be somewhat less than along the North Platte It is not believed, therefore, that the discharge of the Laramie River at the point gauged will suffice for the irrigation of more than

100,000 acres, but the measured volume is reinforced below by two important tributaries, the Little Laramie River and Sabille Creek. There have been no measurements which would give even an approximate idea of the volume of water which they contribute.

DIVISION NO. 3.

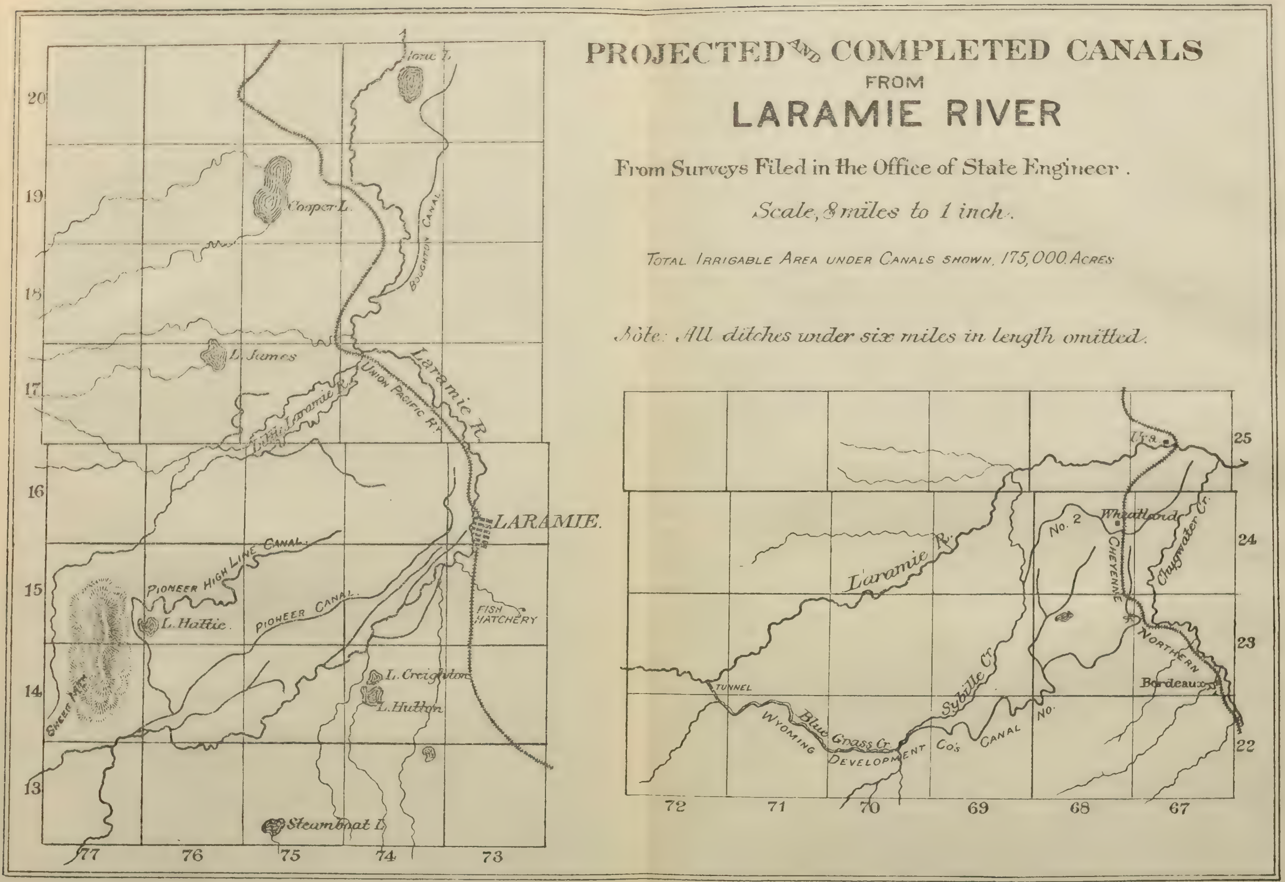
BIG HORN RIVER.

More land can be reclaimed by the water of the Big Horn and its tributaries than from any other stream in this State. This land has a lower average elevation than the irrigable land of any other Water Division and its agricultural value is correspondingly increased. The greater possibilities of this drainage basin are due to a water supply, which is only equalled by only one other stream in the State, and by the greater acreage of irrigable land. So far as present use goes, however, this Division stands at the foot of the list. There is less land under ditches and far less reclaimed than in any other division. It is only notable in the extent of its unused opportunities and wasted resources.

The "Basin" is rightly named. It is a great bowl, almost as large as the State of Massachusetts and bordered by a continuous mountain rim. On the east the peaks of the Big Horn range rise above 13,000 feet, while on the west and south in the Wind River and Shoshone mountains are some of the loftiest summits of the Rocky Mountain system. These lofty ranges are a great store house of the winter snows and an effective shelter from local storms. There is an almost entire absence of the sweeping winds which are so marked a feature of the climate of the Great Plains. The summers are hotter and the winters dryer than in any other section of the State. A maximum depth of snow of two inches, for the entire winter, has been twice reported to this office. In the bad lands, where the white surface of the hills

LARAMIE RIVER AT UVA

NORTH PLATTE RIVER AT ORRIN JUNCTION



PROJECTED AND COMPLETED CANALS FROM LARAMIE RIVER

From Surveys Filed in the Office of State Engineer.

Scale, 8 miles to 1 inch.

TOTAL IRRIGABLE AREA UNDER CANALS SHOWN, 175,000 ACRES

Note: All ditches under six miles in length omitted.

serve as reflectors, and towering mountains serve to restrict the movement of the heated atmosphere, the temperature in summer becomes something astonishing. The thermometer in our camp on Sage Creek, in the early part of July repeatedly registered over 100 degrees in the shade, on one day reaching 106 degrees in the shade and 134 degrees in the sun.

These exceptional climatic conditions are only found in the lower portions of the valley away from the mountains. They are not likely to attract pleasure seekers but they greatly augment its agricultural possibilities. It is too early as yet to predict what can be grown in the most favorable portions of this Division. That it is one of the finest sections of the State for market gardening and for the growing of small fruit has been demonstrated; that it will prove equally well adapted to the growth of standard fruits is believed.

STREAM GAUGINGS.

All of the important streams in this division have been gauged; some of them two or three times. A record of the gaugings for 1892, was given in the report for that year. They embraced Paint Rock Creek and No Wood River on the east, the different branches of the Popo Agie and Shoshone Rivers on the west, in addition to the Big Horn itself. In 1893 a gauging was made of Shoshone River, and, during the present year, measurements were made of the discharge of Shell Creek, Big Horn, Shoshone, Grey Bull, Popo Agie and Wind River.

The most instructive of all these measurements is that of the Big Horn River, made at Lovell ferry on the 26th of June of the present year. This point is below all the streams emptying into the river and also below all ditches taking water out of it or any of its tributaries. As this stream represents practically all of the water available for irrigation in Division No. 3, the measurement at this point gives the total volume of waste or unused water in this Division.

The water which flowed unused beyond our borders on the day when gauged was sufficient to cover 50,000 acres of land to a depth of one foot, the gauging showing a flow of 26,000 second feet. To state this in another way the water which on one day left the State without rendering any service to its people would have, if held and used, been ample for the complete irrigation of over 25,000 acres. The money value of this wasted water, from this one stream, for one day, if measured by the price paid for its use elsewhere was fully $25,000, and the value of the productions of the land it would have irrigated, if measured by the average value of the products of irrigated land throughout the arid region, would have been fully $400,000.* Even if measured by the low average value of farm products for Fremont County it would have been worth over $300,000. The water of this stream which ran to waste in one day would have irrigated more land for the entire season than was cultivated in the State in 1889. If this is the loss to the State for a single day what must be the possibilities of the entire season and what the loss to the State through our failure to use them? Only a partial answer can be given. The stream was measured in the latter half of the irrigation season after the period of greatest need and of largest supply. While the stream was on the decline, the high water marks were visible, and we were enabled to secure the flood cross sections and to compute the maximum discharge. This was in round numbers 53,000 second feet. From the record kept by the ferryman it seems that the flood volume of this stream was maintained for more than one-half of the month, and that from the 1st to the 20th there had not been a day on which the discharge had fallen below 40,000 second feet. Every day, of the first half of the month of June, the waste water of the Big Horn River was sufficient for the complete irrigation, for the entire season, of 50,000 acres of land, and the loss in productive value to the State from our failure to utilize this water if measured by the low average value of farm products recorded in the 11th census was over $600,000 for each day of this period, and the total loss for the month about one-half of the present assessed valuation of the State.

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*(See Statistics 11th Census.)

There is sufficient irrigable land along this stream and its tributaries to secure a result fully as great as is above indicated, but instead of this it is now uninhabited, unimproved and barren. In each of the three years in which I have crossed the largest tract of irrigable land in this basin it has been with extreme difficulty that we were able to secure sufficient sustenance for our team.

No figures are presented showing the result to come from the utilization of the water of this division for the entire season because such a result can never be secured in this State. There is not sufficient irrigable land on which to apply it. A large percentage must forever leave our borders unused, but there is land enough to secure far greater results than those indicated as possible from the use of the discharge for one month alone. The location of the available land, as well as the character of the water supply to reclaim it, is indicated in the brief mention which is given of some of the larger projects for reclaiming the irrigable land of this division. Nearly all of these have been personally examined and all have been located by engineers and irrigators of known experience and responsibility. While they include all the larger areas, the numerous smaller tracts of irrigable land, described in the 130 permits in this division, recorded in the table at the latter part of this report, make a large addition to the aggregate acreage. These lands are, as a rule, of equal value and can be reclaimed at less cost per acre than the land described in the "Applications for Permits" of the larger projects mentioned hereafter.

WHERE LAND CAN BE RECLAIMED.

To those looking for homes in this Division a study of the abstract of the permits issued in the last two years will be of interest. The approved applications in this division show fairly well the nature of its opportunities. The permits for small ditches are sufficiently described in this abstract and do not need further comment. They are as a rule only intended to water land already in the possession of the applicant and are only of value to intending settlers in showing the location and estimated cost of ditches. Not so with the larger projects. These must be the home of colonists. These canals when built will be of a public character, to water land open to the public, and their completion and financial success will depend wholly on the land being occupied and used. It is with hope that a statement of these opportunities may aid those projecting canals alike with those seeking an opportunity to use the water they will supply, that an outline of the character and estimated cost of those large enough to *have a value to the public* is given.

Comparatively little land can be reclaimed along the main stream. Large tracts of broken and bad land country having no agricultural value border the Big Horn River. Some of the land suited to irrigation lies too far above the stream to be reached. It is not an easy matter to divert the water of this river; its fall is slight—about 4 feet per mile for a large part of its course in this State—and before the table lands can be reached by a canal a tract of broken country intervenes to prevent. Only one large tract of irrigable land exists along its entire length in this State. This is between the mouth of No Wood and Owl Creek canon. It lies on both sides of the river, the portion on the east side being under a completed ditch, but is not being cultivated. A "Permit" has been issued for a canal to water the greater part of the irrigable land west of the river. The map which accompanies the "Application" shows about 30,000 acres to be reclaimed. Length of canal 55 miles. Estimated cost $200,000 or about six and one-half dollars per acre to be irrigated.

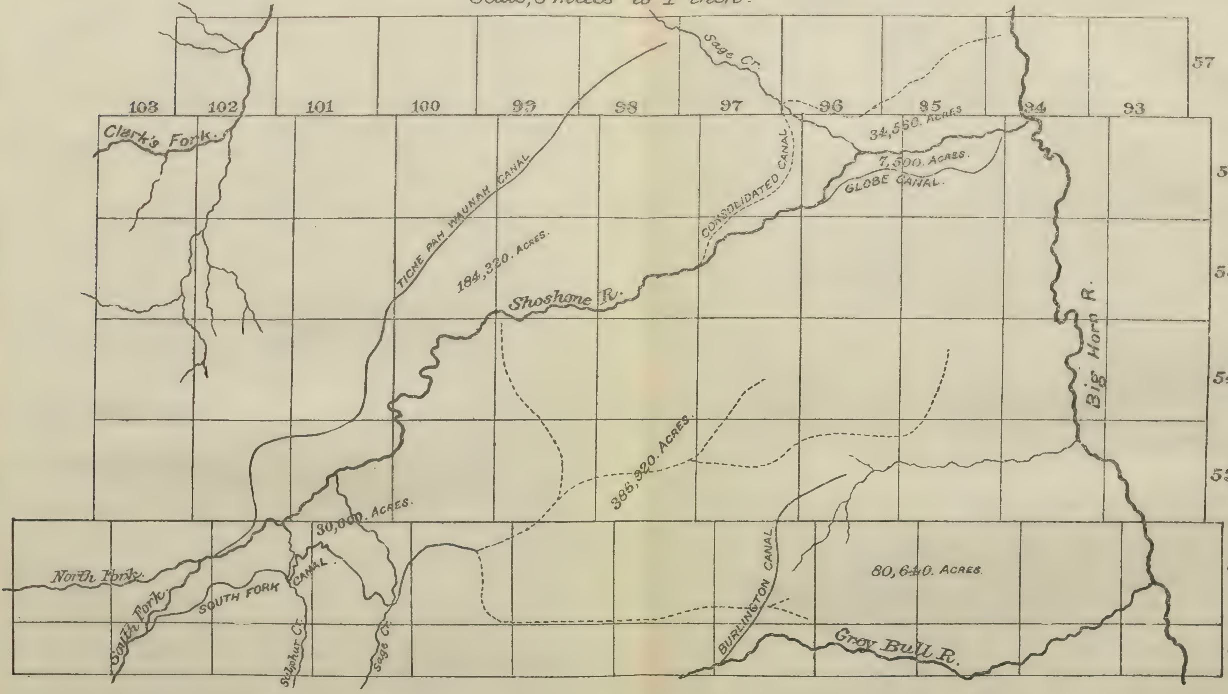
East of the river are Shell, No Wood and Paint Rock

MAP

SHOWING PROJECTED CANALS FROM SHOSHONE AND GREY BULL RIVERS.

From Surveys Filed in the Office of the State Engineer.

Scale, 8 miles to 1 inch.



Creeks. There is no large single area along these streams, but there are narrow valleys of fertile land which can be cheaply watered. In the absence of surveys the possible irrigable acreage along these streams cannot be stated, but the estimate for Shell Creek was 10,000 acres, the valley being about 15 miles long with an average width of one mile. The cost of constructing the main supply ditch ought not to exceed five dollars per acre. The water supply in each of these streams is ample. The gauging of Shell Creek, made June 24th, 1894, was 569 second feet, and the discharge at high water over three times as much.

West of the Big Horn, along the Shoshone and Grey Bull Rivers, is the largest tract of irrigable land in the State. Its extent and the works projected to reclaim it can be best understood by examining the map facing page 140. This map embraces nearly all the irrigable territory on both streams. There are in addition some narrow valleys along the Grey Bull and Shoshone Rivers west of the limits of the map, but no large areas except along the valleys of the stream, the country being too broken for the construction of canals.

THE GREY BULL RIVER.

The greater part of the land which can be watered from the Grey Bull River is found within 20 miles of the Big Horn. Along this portion of the stream the river bottom is nearly three miles wide and the plateau or bench lands north of the stream are low and extensive. It costs but little more to construct ditches to water the bottom lands than to build laterals from a main canal, and nearly every settler has his individual ditch. Fifty-five permits have been issued from this office for ditches to water the bottom along fifteen miles of the stream. That this was an unnecessary multiplication of waterways has been appreciated from the first. One-fourth of this number of ditches would have watered the land with a saving of cost to irrigators, a saving of water to users, of land to farmers and of expense to the State in supervision, but so long as the divided control of land and water continues it will be impossible to prevent just such results as this. This result is not as bad as it would have been if the influence of this office had not been exerted to secure a diminution in the number of appropriations. Through these efforts several additional ditches were abandoned and those in existence enlarged; and in one or two instances ditches begun have since been abandoned.

Only two permits are now in existence for water in the plateau or bench land along this stream. Two were issued to water these lands in 1890, but were subsequently cancelled on failure of projectors to file a map showing the location of the ditch, which failure was due to their inability to raise money to go ahead with the work. Two other permits have subsequently been issued for canals covering the same ground. That for the Bench Canal describes about 5,000 acres, part of this being in the bottom and part upon the plateau. Length of canal 8 miles; estimated cost $9,000 or about $2.00 per acre. This canal has been completed for about half of its length. The permit for the Burlington Ditch describes 65,000 acres, all of this land being bench land. Length of main canal 25 miles; estimated cost $100,000.

SHOSHONE RIVER.

There is more irrigable land along the Shoshone River than along any other stream in the State. It is no disparagement of the value of irrigable lands in other sections of the State to say that the lands which can be reclaimed from this stream have in the aggregate a greater value to the State than any similar body of lands elsewhere. This is due to their fertility, to the favorable climatic conditions and to the ease with which water can be distributed over the lands after the main canals are constructed. The obstacles to diverting the stream are, however, of the most serious character. For forty miles, down stream, from the union of the North and South branches of the river it flows through a narrow canon having in many places vertical or steeply inclined walls varying in height from one hundred to three hundred feet. There is no way of emerging from this canon which does not involve engineering problems of the most serious character and a very large outlay of money. Above the union of the two streams a mountain interposes on the north side to prevent the constrction of canals while on the south side there are four or five miles of broken and rocky country which must be crossed before the irrigable land can be reached. In order to reclaim the largest and best tracts of land these obstacles must be overcome. Along the lower portion of the river ditches can be built much more cheaply, but the land which can be watered from such ditches is limited in extent. Five permits for important canals have been issued. These are Tich Pa Wah Nah Canal, South Side Canal, Globe Canal, Consolidated Canal and Shoshone No. 1 Canal. Only two of these are of exceptional size or importance and these only will be mentioned.

TICH PA WAH NAH CANAL.

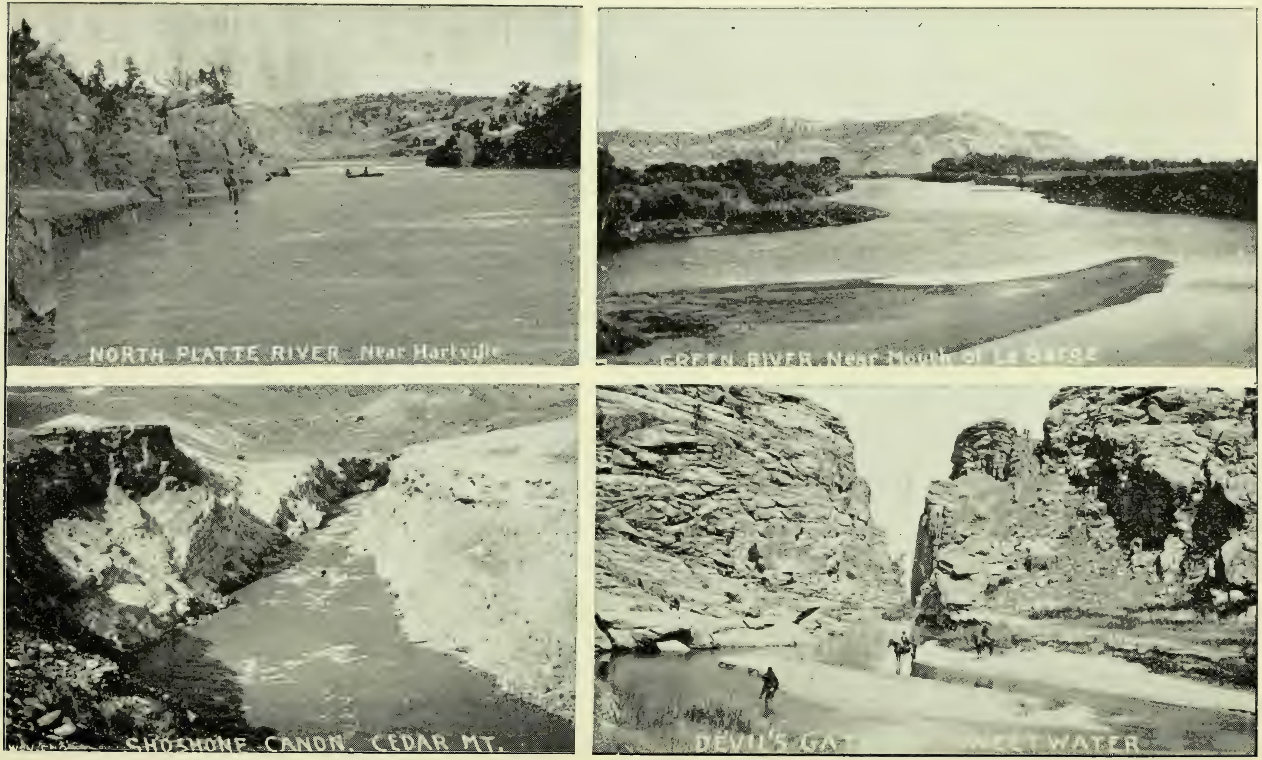
This canal starts a short distance below the union of the North and South branches of the stream in the canon of Cedar Mountain. It reaches the top of the canon near the eastern base of the mountain and for thirty miles covers nearly the whole of the plateau lands on the north side of the stream. Its course and the land covered as shown in the map facing page 140. The illustration facing page 144 shows the river at the point where this canal leaves the canon of this stream and gives a partial understanding of the nature of the obstacles to be overcome in its construction. Total length of the canal 48 miles; estimated cost $2,000,000; acres of land to be reclaimed 150,000. This acreage is slightly less than is shown on the map.

SOUTH SIDE CANAL.

The survey of this canal shows it starting from the South branch of the Shoshone about seven miles above Cedar Mountain. In the acreage it covers, the unusual engineering features involved in the plans for its construction, it is one of the most interesting and important irrigation works yet projected in this State. From the head to its proposed terminus there is a difference in elevation of over 1,500 feet. There is one vertical drop of about 150 feet over a rock bluff. Twenty-seven hundred cubic feet per second will pour over this precipice when the canal is full. The canal covers over 400,000 acres, but a considerable percentage of the land is unfit for irrigation. It is believed, however, that more than half of the total area is susceptible of reclamation. The total length of the canal as projected is 150 miles; estimated cost of completed work $1,750,000. This estimate is not, however, conclusive as the survey of this canal has only been completed for about 30 miles, simply a reconnoissance of the remainder of the line having been made. The value of this canal is almost as great for the water power which it can be made to develop as for the land it will reclaim. Of the 1,500 feet of fall, between the head and lower end of this canal, only about 300 will be absorbed in giving it its necessary grade. The remainder can be utilized in the development of power. There will be one instance in which the entire 2,700 cubic feet of the canal's capacity can be utilized in a drop of 150 feet, and there will be several instances in which nearly the entire discharge of the canal can be similarly utilized. If, as has been stated, the reclamation of the arid domain is to be the joint result of irrigation and electricity this canal ought to be a complete success

WATER SUPPLY.

The permits already issued for canals from this stream embrace in the aggregate between four and five hundred thousand acres. To reclaim this, on the basis of the maximum appropriation permitted by law, will require over 5,000 cubic feet per second. It is a well known fact, however, that the maximum, permitted by law, is not used except during a brief period of the irrigation season; that after the first of July the demand becomes


NORTH PLATTE RIVER Near Harkville
GREEN RIVER Near Mouth of La Barge
SHOSHONE CANON, CEDAR MT.
DEVIL'S GATE
SWEETWATER

SITES FOR DAMS

less than this and continues to diminish throughout the season. If, therefore, the Shoshone River can be relied upon to supply 5,000 cubic feet per second for the period of maximum use there need be but little fear of a shortage by the people who settle on these lands. Sufficient measurements have not been made to determine exactly what is the discharge of the stream, but the following are sufficient to show that it is in excess of the requirements of the ditches now projected. In the latter part of July, 1892, the river was measured at Corbett, the discharge being 4,973 second feet. This was after the period of greatest need. The marks of high water at that time indicated a discharge somewhat less than the present year but must have approximated 10,000 second feet. In 1893, the stream was measured in the latter part of August about the time its discharge would be least for the entire year. The discharge was 1,200 second feet or almost double the minimum discharge of the North Platte River. This year the highest discharge was 15,000 second feet. No measurements were made after June. The South Fork was measured on July 2nd, the discharge being 4,623 second feet; the estimated maximum discharge of this stream being 8,700 second feet. From these measurements it is believed that the midsummer discharge is about double the requirements of the projected canals, and the flood discharge about three times as great.

The adequacy of the water supply of the Grey Bull has been called in question, but it is impossible at this date to express a positive opinion. Only one measurement has been made of this stream, that made on July 12th, 1894. The discharge at this time—1,210 second feet—was far greater than the requirements of the canals now projected.

Above Owl Creek canon the Big Horn changes its name to Wind River. This stream was gauged on June 15th, at the ferry. The discharge—6,209 second feet—was nearly three times that of the North Platte River on the same date. At present no part of its water is diverted, it being within the Shoshone Indian Reservation. There is an extensive table land south of the stream which will doubtless in time be reclaimed, although from a hasty examination it seems that it would require a large outlay to get canals upon it. The bottoms on both sides of the stream, where crossed, embraced several thousand acres of excellent land which could be irrigated at slight expense.

Ft. Washakie is situated on Little Wind River which was crossed on July 16th, but was not gauged. An excellent ditch has been taken from this stream a short distance south of the Fort which will water considerable land on the Reservation. This, I was informed, was constructed under the supervision of the Military Authorities for the use of the Indians. On July 17th the Popo Agie was gauged several miles below Lander. This stream is made up of three branches, the Main, the North Fork and Little Popo Agie. About 17,000 acres are now irrigated from this stream; a map of the ditches appearing in the report of this office for 1892. There is yet a large volume of unappropriated water. This was shown by the gauging which was made below all ditches of any size and approximately represented the unappropriated water; the discharge was 523 second feet.

DIVISION NO. 4.

GREEN RIVER.

In the Report of the U. S. Geological Survey for 1877, Mr. Gannett, speaking of Green River, says:

"In the march of emigration towards the setting sun, the drainage area of the Green River has been most carefully avoided. This has surprised me not a little. Although the Green River country, as a whole, is not the most delightful place of residence in the world, still there are many fine bits of bottom land

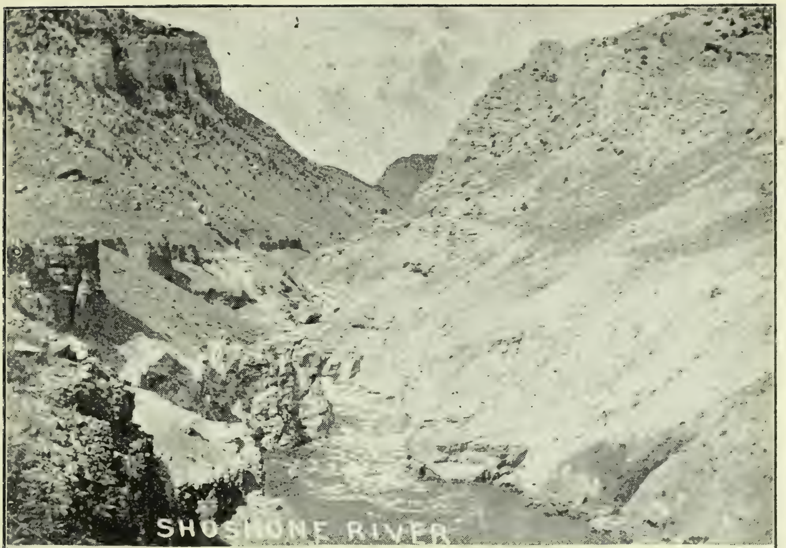
and of bench where the grazing is excellent; spots which, had they been in Colorado, would long ago have been seized by the squatter. Within that part of the basin which it fell to my lot to survey I can recall but half a dozen ranches. Of these, one derives its principal revenue from the ferry over the Green; another, at the upper stage-crossing of the Big Sandy, is a stage station; a third is a very large dairy ranch, located on the Green, at the mouth of Fontenelle Creek. Besides these there are two or three cattle ranches on the Green and La Barge Creek."

This extract is given because it represents fairly well the condition of this section at the present time. A description of irrigation along the Green and its tributaries is chiefly striking for the showing it makes of the opportunities which are unused rather than the value and importance of what has been accomplished. Because of the fact that a shortage of water on this stream is one of the matters of the distant future and because there is no immediate prospect of any controversies over the division of water on the main stream or its tributaries, but little has been done in the way of stream gaugings.

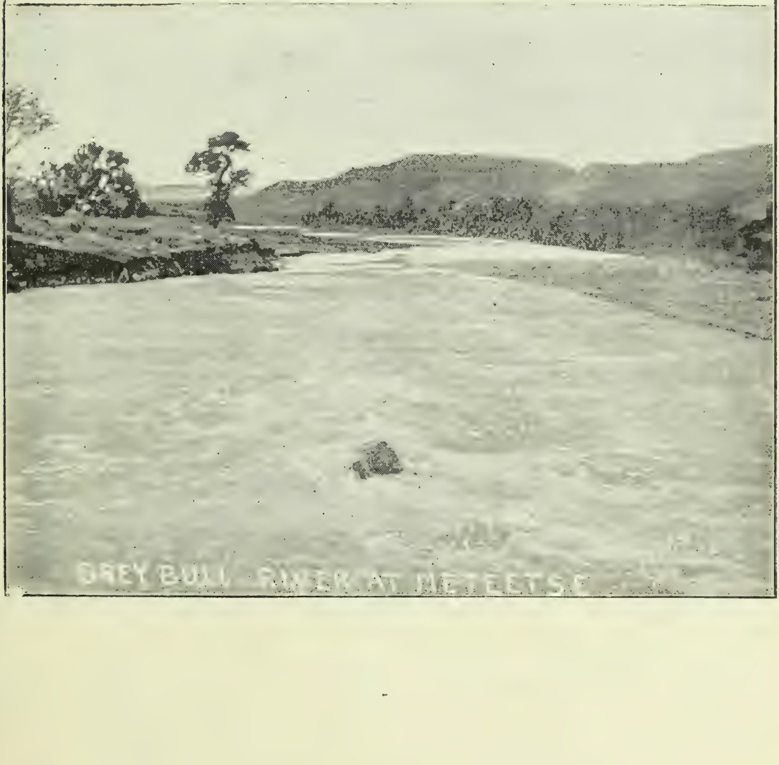
In 1891, a daily observation was kept at Green River City of the height of the stream, the engineer at the pumping station taking the readings for this office. This record was begun on June 11th and continued until the middle of September, the results being shown by the diagram on page 30, Appendix. During the years 1891 and 1892 several gaugings were made of the stream at the ferry at Green River City and a line of levels was run, to determine the fall of the stream at this point, to enable us to interpolate computed discharges between the actual measurements. Since 1891, it has been impossible to give any time to the gauging of this stream and, in the absence of this, no effort has been made to secure a daily record of its height, but it is expected to resume such record next season. The record kept, being for only one season, has, of course, but little value in showing the mean discharge of the stream owing to the variations between different years. In 1893 the discharge was much greater than in the year measured but the exact amount of the difference cannot be stated. The greatest volume recorded for the year measured was 11,040 second feet which was on June 11th. The lowest was on September 9th, 1,510 second feet. The record of this single year would indicate that the flow of Green River is somewhat greater than that of the North Platte.

In the Report of the Geological Survey, before referred to, a measurement was made of this stream the latter part of June at which time the discharge was 13,620 cubic feet per second, while the estimated maximum discharge, as shown by the flood marks along its banks, was 18,500 cubic feet per second.

The information as to the possible location and cost of ditches, to divert the water of the Green and its tributaries, is perhaps more complete and reliable than on any of the other large rivers of the State. This is largely due to the energy and persistence of Mr. Geo. A. Crofutt who has, for the past five years, been engaged almost constantly in ascertaining the opportunities presented by this river and its tributaries for constructing canals, and in endeavoring to secure money for their construction. The different surveys conducted under his management during the past five years have cost, I am informed, between thirty and forty thousand dollars. There has been thus far no material result save the increase of knowledge as to what can be done and its cost. The largest of the canals thus far surveyed is that of the Green River Basin Land and Canal Company. This canal is to be 97 miles long and to cost $1,500,000. It is impossible to determine the acreage which can be reclaimed by this canal as a considerable portion of the land lying below it cannot be irrigated. The canal covers 332,000 acres. The cost of this work, above stated, is that given in the application for permit, but in a report submitted to the company by the engineer making the last and most complete survey of this canal the cost was very materially increased, and, in my judgment, properly so. The great length of this canal and the large acre-



SHOSHONE RIVER



GREY BULL RIVER AT METEETSE

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age of land which will be dependent upon it, should it be built, will make it necessary that unusual precautions be taken in its construction. The necessity for this is reinforced by the nature of the country which it must traverse. All the lands to be watered lie far above the stream and to reach them the canal must follow, for a long distance, along the bluffs which border it. Before these are surmounted it is necessary to cross Fontenelle Creek and Shell Creek as well as the channels of a number of smaller streams. To provide against accidents from floods will require in the preparation of the plans for this work, and in the supervision of their execution, the ripest experience and best engineering skill to be obtainable, and to construct this work within the limits of profitable cost there must be not only ample funds but the work must be in hands which will secure the most systematic and economical execution.

The only other permit from this stream, for a canal of any magnitude, was issued from this office on March 13th, 1891, for the Green River Canal. This permit was for the construction of a canal 15 miles long to water 12,000 acres of land, the estimated cost of the canal to be $12,000, or only about one dollar per acre. The permit expired by limitation of time in March, 1894, without anything being done towards its construction.

The principal tributaries of Green River on the east are the Big Sandy and New Fork. A canal was projected from the Big Sandy as far back as 1889, Mr. Crofutt being the active spirit in the enterprise. A very complete survey was made of a canal system, embracing the use of the Big and Little Sandy Rivers, and involving the construction of a reservoir covering about 1,200 acres. The project was never carried to completion from lack of funds, and has since been taken up and abandoned by two or three companies. It is at present in the hands of parties who have, it is understood, performed about $10,000 worth of work upon the project, but who are unable to procure the means with which to complete it. The canal is to be 30 miles long and is to water about 35,000 acres of land; the cost, not including the reservoir, is to be $75,000. This is every way a meritorious project. The lands are excellent, the water supply is believed to be ample and its completion will result in the settlement of a country which at the present time is of practically no value whatever to the State.

South of the New Fork and between the Big Sandy and Green River is a large area of land well adapted to irrigation. If it can be reclaimed it will greatly increase the productive resources of this region as the absence of a water supply makes this land at present of very little use for grazing purposes. There is an abundant water supply in the New Fork but no survey has been made to determine the cost of a canal to divert it.

New Fork was gauged on July 21st of the present year, the discharge being 2,055 second feet. The Big Sandy was gauged on July 20th of this year, its discharge being 148 second feet. The discharge of the Big Sandy when measured on July 1st, 1889, was 700 second feet. Should the extension of irrigation on these streams ever attain sufficient importance to create a shortage in the water supply, there is an almost unlimited opportunity for storage by improving the lakes around their headwaters. This is particularly true of New Fork River. Fremont's Lake, which lies on the head of one of the branches of this stream, is one of the largest natural reservoirs to be found in the State. This lake is about 12 mile long and about 2 miles wide in the widest place. Its outlet is through a narrow canon which permits of the water being dammed up to a considerable height at so slight a cost as to be of no moment whatever should an extra water supply ever be found necessary.

At present practically nothing is being done with the water of Big Sandy and only a few small ditches have been taken from New Fork. The streams most used for irrigation among the tributaries of the Green are the Fontenelle and La Barge, but the ditches which divert their waters are all comparatively small and do not merit special notice. Both of these streams, together with every other tributary of the Green, carry a large volume of unused water.

BLACK'S FORK.

The tributary of the Green on which controversies over water are most likely to arise is Black's Fork. There are now in existence 16 permits for appropriations of water from this stream, issued since the passage of the State law, and there are several claims to appropriations made prior to that time. Of these four are for canals of considerable size. The first of these is the Black's Fork Canal which is to be 20 miles long, to water 35,000 acres of land and to cost $25,000. Although the estimated cost of constructing this canal was considerably less than one dollar for each acre of land reclaimed, the parties inaugurating the work were not able to carry it to completion. They became financially involved and the project passed into other hands who, it is understood, intend to complete it. This permit was issued in 1891, and expired by limitation in 1893, but the time of completion was extended to September, 1895, on petition of the parties at present in control of the property.

Another permit was for the High Line Canal. This ditch was to be 15 miles long and to cost $15,000. The description of the land to be irrigated embraces 24,320 acres. This permit expired by limitation on Sept. 1st of the present year, nothing having been done in the meantime towards its construction.

On the 18th of June, 1892, a permit was issued for the construction of the Hampton Canal. This canal was to be 20 miles long; estimated cost $50,000; acreage to be irrigated 34,560 acres. The time for the completion of this canal expired Sept. 1st, but no notice has been received of its completion and it is understood that but little work was done upon it.

On the 22nd of October, 1892, a permit was issued for the construction of the Granger & Black's Fork Valley Canal. This canal was to be 30 miles long; estimated cost $85,000, and is to reclaim 44,700 acres of land. The time of completion as originally fixed for this canal was Sept. 1st, 1896, but on Jan. 10th a change in the parties owning the project was made and a petition made for extending the time of completion. This extension was granted, the time of completion being fixed Sept. 1st, 1898.

It will be seen that the aggregate area, embraced under these four canals, was 141,580 acres. It is not believed that the capacity of the stream is sufficient to reclaim this area, even if there were no other claims to its waters, but when it is considered that there are at least 20 claims of small appropriators, the insufficiency of the supply for the projected use is at once manifest. There are, however, opportunities for the construction of large storage reservoirs on this stream at small cost and this fact has been taken into account by the State Engineer, in the approval of permits so much in excess of the ordinary flow.

At present the stream cannot be considered as being over appropriated as the permits for the two largest canals have lapsed by reason of expiration of time for which approved without anything being done towards their construction.

The reclamation of the land, along Green River and its tributaries, would be promoted by a union of the irrigable and grazing land. Stock raising must continue to be the leading pursuit of the settlers of this section on irrigated as well as unirrigated land. This is made necessary by the elevation of much of the country to be reclaimed and by lack of transportation. Stock raising on the open range is too hazardous. When restricted to the land under ditches it is unprofitable, but when the two are combined, the unirrigated land being used in summer and the products of the irrigated land for winter, there is both increased profit and a removal of the danger from winter storms. By recognizing these facts in our land laws and making a homestead

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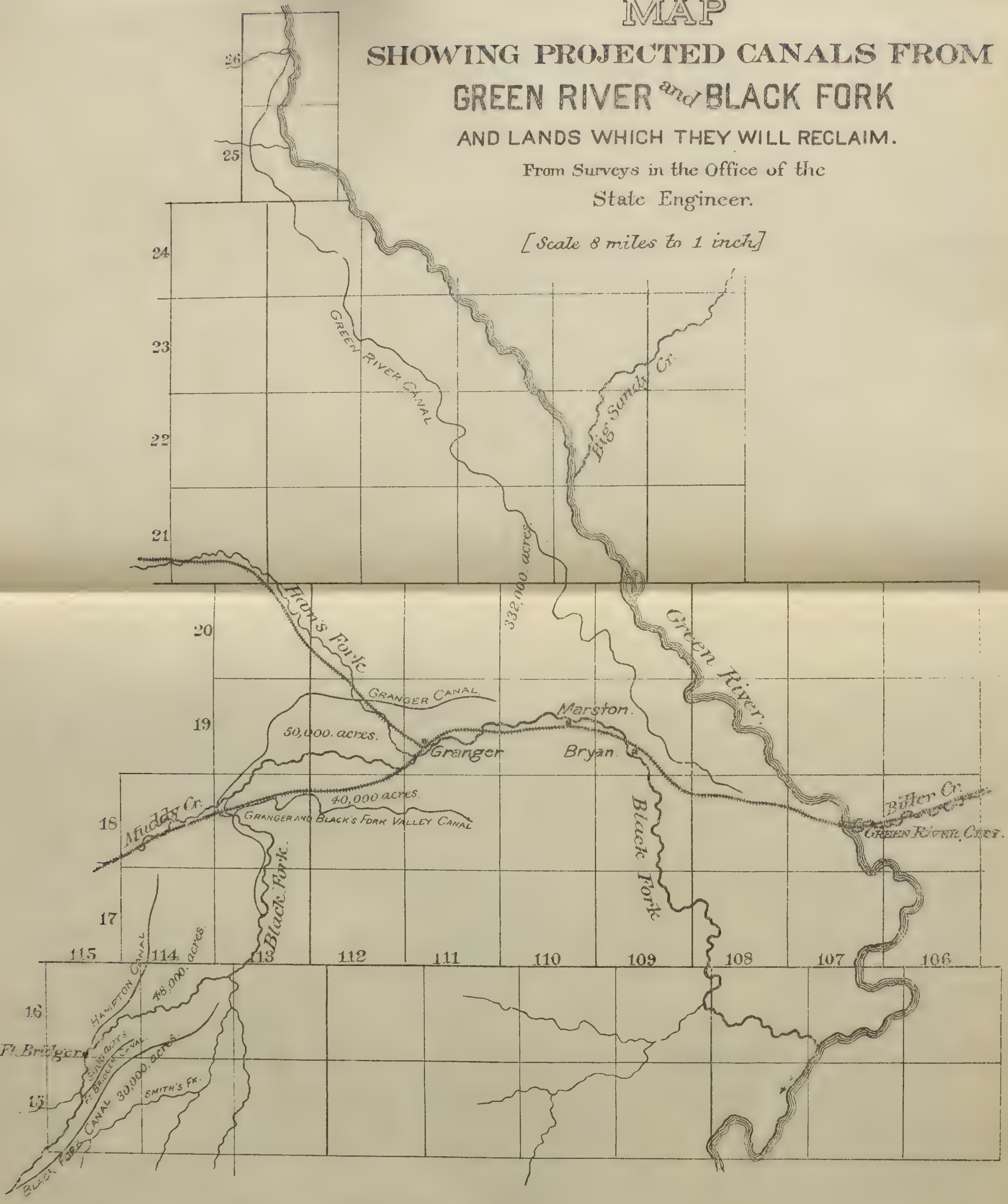
MAP
SHOWING PROJECTED CANALS FROM GREEN RIVER and BLACK FORK
AND LANDS WHICH THEY WILL RECLAIM.

From Surveys in the Office of the
State Engineer.

[Scale 8 miles to 1 inch]



consist of a small area of irrigated and a large area of grazing lands we would provide for the best use of our resources.

WATER DIVISION NO. 2.

In Water Division No. 2 there are many opportunities for making homes. Powder River, although one of the largest streams of this division, has no ditches of importance. Six hundred second feet of water ran to waste in Goose Creek on June 18th of this year and the loss in Clear Creek was equally large. On June 20th the waste water of Tongue River was fully one thousand cubic feet per second. The problem on all these streams is to increase the supply for late irrigation. This will be accomplished in part by making a greater use of the flood discharge. Much of this water so used returns as seepage later in the year. Something is being done in Sheridan County in the construction of reservoirs and there is opportunity for further work in this direction. There are a number of lakes on the head of Piney Creek and excellent sites for reservoirs on the head waters of the South Fork of Tongue River.

Much can also be done by improving the channels of the streams themselves. A large percentage of the water which enters them disappears in underground channels. The loss from this cause on the South Fork of Clear Creek and on the head waters of Crazy Woman is well known. The North Fork of Powder River disappears entirely for five miles a short distance to the left of the road to the Big Horn Basin. The South Fork of Tongue River is almost entirely lost in this way. Tongue River drains three or four times as large a mountain area as the Little Horn but there is little difference in the volume carried. The following affidavit attached to an "Application for Permit" may account for this in part:

STATE OF WYOMING, } ss.
County of Sheridan. }

"John R. Gatewood, being first duly sworn, deposes and says: That he is a citizen of the County and State aforesaid. That he is the person described in the annexed 'Application for a Permit to Divert and Appropriate the Waters of the State of Wyoming;' and that the water which he desires to appropriate from the South Fork of the Tongue River, one of the natural streams of the State, is water which has not as yet been appropriated by any person for 'beneficial uses;' that in the said South Fork of Tongue River, back in the mountains, at places described in said 'Application,' there are natural holes on the bottom of the stream through which about twenty per cent. of the natural flow of said water, at low water, escapes into the earth, and that as far as affiant has been able to ascertain, does not again run into said stream or any other natural stream, but is wholly lost; that said affiant believes that he can close said holes in the bottom of said stream and thus be able to save said water for beneficial uses. That he is the owner of possessory rights to agricultural lands in said county and has not water to reclaim the same and that by being allowed to save this water he verily believes and does believe that he can secure said water for said beneficial uses.

JOHN R. GATEWOOD.

These losses ought to be prevented and they doubtless will be when the lands below the ditches now built are occupied and the need of an increased supply becomes more manifest.

THE NEED OF MORE FARMERS.

To an outsider the lack of agriculture of this State is an enigma. That a State, situated along the main highway of travel between the east and the west, should have fallen behind its neighbors in wealth and population is usually regarded as due to lack of resources. Nothing could be further from the truth. The great rivers of the State will reclaim land enough to support a million people; the fertility and productiveness of the soil has been demonstrated in such signal manner that it is now beyond question. There is an unsurpassed home market with high prices for farm products. Wheat sells for more at Saratoga and Lander than it does in Chicago. The writer, in crossing the Big Horn Basin in 1893, paid 3 cents a pound for oats and repeated this in 1894. The price of nearly every important farm product is higher in the towns along the Union Pacific than in almost any other section of the country.

With these favoring conditions why is it that we depend upon surrounding States? Why is it the county which has grown 974 bushels of potatoes on an acre of ground in one instance and 1,015 bushels in another does not rank with Greeley as an export center? Why is it the county in which 131 bushels of oats has been grown on an acre shipped in almost as many as were produced in 1893? Why is it that the leading county of the State, with one-fifth the wealth and population and with one hundred thousand acres under ditches, is without a flour mill or a market garden and sends outside the State nearly one thousand dollars a day to purchase farm products?

There is one explanation and only one—lack of farmers. Agriculture has been neglected. We have depended upon other resources, engaged in other pursuits and failed to provide conditions which would secure the construction of canals or the occupancy of the land under them.

That such a condition of affairs is a great obstacle to the State's growth must be manifest to every one. The shipment of food supplies from abroad increases the cost of living and places this State at a great disadvantage with its neighbors in securing the establishment or operation of factories or other industrial enterprises. The money sent abroad is also a serious drain on the resources of the State; just how great few appreciate. To obtain some specific information regarding this, the railways entering Cheyenne were requested to furnish this office with the shipments of farm products for 1893, from points outside the State, to this city. In part they did this and placed their books at our disposal for the completion of the work. The table below shows the result:

Shipment of Farm Products into Cheyenne during 1893.

	AMOUNT		RETAIL VALUE	
PRODUCTS.	TONS	POUNDS	IN CHEYFNNE.	
Eggs	107	921	$ 23,545	92
Small Fruit	107	1,226	21,522	60
Pork	236	96	70,814	40
Poultry	47	17	14,102	55
Potatoes	808	356	16,163	56
Lard	10	945	2,618	12
Vegetables	352	1,831	21,174	93
Butter	45	1,777	22,944	25
Beef	70	1,082	21,162	30
Apples	107	1,979	10,798	95
Oats	423	1,452	10,593	15
Mutton	78	1,804	11,835	30
Cheese	11	139	4,427	80
Flour	618	961	18,554	41
Straw	71	1,000	715	00
Hay	2,597	90	31,164	54
Corn	724	1,579	18,119	74
Grain	540	54	10,800	54
Beans	27	1,162	2,758	10
Bran	259	150	5,181	50
Other Meats	4	1,515	1,189	37
The above are all Shipments by rail. In addition there were large Shipments of Dairy Products and Vegetables from Colorado and Nebraska by wagon, the estimated value of which for 1893 being			10,000	00
Total value for 1893			$350,185	03

Some criticism has been expressed because of the items of beef and mutton, the county producing a surplus of both these articles. While this is true, and part of the shipment is due to the return of dressed beef grown here, a large part is the shipment of beef and mutton in the winter months when the supply here is wholly inadequate—but little being done as yet in winter feeding of stock. From the above it will be seen that this city pays nearly one thousand dollars per day for farm products purchased outside the State which can, and ought to be, grown at home. When to this is added the outlay of Rawlins, Rock Springs, Laramie, Green River, Evanston and smaller towns it is not too much to say that the drain on this State from the towns along the line of the Union Pacific railway is fully one million dollars per year. This money goes out never to return. There is no reciprocal trade with our neighbors. We buy from them, but they buy nothing from us in return. If, instead of this, the money went to farmers within the State, it would return in the channels of trade; enhance the business of our towns, increase our taxable wealth and in a hundred ways promote the trade and industry of the State.

This disastrous economic policy is not confined to the southern half of the State. Through the courtesy of the Burlington railway, I was enabled to secure the shipments of farm products, *in car-load lots only*, to Newcastle, Buffalo and Sheridan.

No Section of the State is farther advanced nor better cultivated than this; yet during 1893, there was shipped into Sherdan 315 tons, 1,000 pounds of oats; 35 tons, 1,750 pounds of wheat; 11 tons, 1,050 pounds of flour; 39 tons of corn and 33 tons, 800 pounds of mixed grain. In this account carload lots alone are considered, no figures being attainable for smaller quantities. Newcastle's record is 145 tons, 350 pounds of hay; 184 tons, 1933 pounds of oats; 120 tons, 1,280 pounds of flour; 32 tons, 500 pounds of bran; 77 tons, 1,410 pounds of corn, and

88 tons, 714 pounds of mixed grain. Buffalo imported directly 12 tons, 1,000 pounds of flour in carload lots, how much in broken lots it is impossible to ascertain.

A report might be written on this topic alone. The shipment into the Big Horn Basin, by a resident thereof, of 50,000 pounds of oats was carrying coal to Newcastle with a vengeance. It involved a haul by railroad of over 500 miles and by wagon of over 100 miles, and they were used in a valley unsurpassed in its agricultural advantages. No less astonishing is the shipment of cattle from the valley of the North Platte—where land is worth ten dollars an acre, and water is free—to be fed at Ft. Collins on the products of irrigated land worth $50 an acre, and where the water is a heavy annual tax.

This disregard of economic laws ought to, and must, cease. There will be no marked increase in population and wealth until it does. The history of the past eight years in which the number of cattle in the State has shrunk from almost 900,000 to but little over 300,000 is significant as to what awaits the State if there is not a change. The loss in assessed valuation is another evidence of the necessity for a change. Not only is the reclamation of our arid land and the increase in our cultivated area necessary to save what we have, but it is doubly necessary to our future growth. Manufactures, mining, diversified industries all wait on the diminished cost and increased comfort of living which will come with the production at home of our food supply. It will not avail the State if every valley is underlaid with coal, or every mountain filled with precious metals. Permanent growth and prosperity will await the diversion of our rivers and the reclamation of our valleys. Creators of wealth will not make their homes in sage brush desert. They will go where the opportunities for enjoying life are more abundant.

RETAIL PRICES OF FARM PRODUCTS

October 10th, 1894.

ARTICLE.	AMOUNT.	VALUE AT			
		LANDER.	BUFFALO.	SHERIDAN.	CHEYENNE.
Hay	Ton	*5 00 †8 00	10 00	*7 00 ‡10 00	‡12 00
Oats	100 Pounds.	1 25	1 00	1 00	1 45
Wheat	" "	1 25	1 25	1 00	1 15
Corn	" "				1 35
Potatoes	" "	1 00	1 00	1 00	1 25
Barley	" "		1 25		
Flour	" "	Best 2 50	2 70	3 00	1 50
Butter	Pounds.	35	25	25	25
Cheese	"	20	20	20	20
Eggs	Dozen.	30	25	25	25
Poultry	Each.	Live 50	50	35	30

*Alfalfa.

†Timothy.

‡Native.

SPECIAL COMMISSION TO SELECT STATE LAND.

In the legislation providing for the State Land Board and for the care and management of the State Land, there is a paragraph which provides that the State Board of Control shall be a Special Commission to select State Lands. There is no adequate legislation as to the powers of this Commission or the methods of performing its duties, and an opinion was requested from the Attorney General in regard to the limits of its work. Under that opinion, the authority of this Special Commission is limited to simply recommending to the State Land Board lands which they deem desirable property for the State to own. It is then left for the Land Board to exercise its discretion as to whether the recommendation is acted upon favorably or the reverse.

The Legislature which enacted this law made no appropriation whatever for the expenses of this Special Commission. The succeeding Legislature made an appropriation of $600.00 for expenses, but no appropriation whatever for salary. For the entire Board to examine lands and join in a recommendation would be a very expensive proceeding which the members of the Board did not feel was justified. The plan has been, therefore, for each member to exercise his individual judgment and discretion in regard to recommendations submitted, the other members having no knowledge whatever of his action or of the merits of the recommendation.

All the members of the Board of Control join in the recommendation that this law be repealed. It is unfair to the Board of Control to place upon it, or the members thereof, the responsibility and labor of examining and recommending selections of land when they have no further voice in the management of the said lands or any possible knowledge as to whether their action is in accordance with the wishes of the State Land Board or will be favorably acted upon by said board. It is unfair to the State Land Board to place upon it the the responsibility of acting favorably or unfavorably upon a recommendation respecting land they have never seen. Having no personal knowledge of the character of the land, or the merits of the selection in other directions, they are compelled, when they approve a recommendation, to depend entirely upon the representations of the member of the State Board of Control who makes it. As the State Land Board has the sole charge of the State Lands and must attend to their management or disposal they should have direct charge of their selection.

The Board of Control asks to be relieved of this duty because it has no direct connection with the management of the public waters and because it tends to interfere with the performance of such duties. Judging from an experience extending over four years, it is the opinion of the Board that it is absolutely impossible to make a selection of land in this State which will meet with the approval of any considerable body of its citizens. The provision of the law, donating land to the State, which requires such lands to be sold for a minimum price of ten dollars per acre is a provision which seriously impairs the value of this donation and which renders any meritorious selection of lands unpopular. If it were not for this provision there would have been no criticism of theBoard of Control or question as to the kind of land to be selected; it would have been their duty to have recommended to the State Land Board the most desirable irrigable land to be found in the State. But with that provision before them the members of this Special Commission were soon made aware of the fact that the sentiment of the State was decidedly adverse to the selection of irrigable lands, the general belief being that the ten dollar an acre requirement was prohibitive; that so long as it remained in force the lands would be neither settled nor reclaimed and that the selection of irrigable lands would tend to retard the settlement and reclamation of our irrigable areas. During the four years the law has been in force not a single request has been made to the Board for the selection of irrigable lands and not a single selection of irrigable land has been recommended which has not drawn forth emphatic protests against its approval by the State Land Board.

It has been different with grazing lands. Numerous requests were received at the outset from parties asking the selection of grazing lands and obligating themselves, if they were selected, to lease the same from the State at a fair annual rental. As a revenue at this time from State lands is of far greater value to the State than a greater revenue will be when wealth and population have increased, some of the members of the Commission, of whom the State Engineer is one, have acted favorably on requests for the selection of grazing lands of exceptional value and a large part of the $13,000 per year received from rentals of State lands comes from the grazing lands so selected, all, or nearly all, of the grazing lands recommended for selection by the members of the Board of Control being productive of a revenue to the State.

The prevailing opinion of the Board of Control has, however, been in favor of the selection of irrigable land notwithstanding popular opposition to such course. The history of the efforts to secure such selections does not, however, warrant its continuance. The first large selection of irrigable land was recommended by the State Engineer. It embraced about 70,000 acres in the narrow valleys along the North Platte River between Casper and Orin Junction. So numerous and vigorous were the protests against this recommendation that it was disapproved by the Land Board. The next important selection of irrigable land was made by the Superintendent of Division No. 4, Hon. William Hinton. This embraced several thousand acres of land in Salt River Valley, Uinta County. This recommendation was approved by the State Land Board, but it is understood that an effort is now being made to secure its cancellation because of a belief that settlers will not occupy the land so long as the ten dollar an acre provision holds good.

At the meeting of the Board of Control in the spring of 1893, the relative merits of selections of grazing and irrigable land were gone over carefully. The fact that there were requests before the Board of Control for the examination and selection of over half a million acres of grazing land made it necessary to take definite action. The conclusion of the Board was adverse to the selection of any large additional area of grazing land. It was the belief of the members that the land donated to the Agricultural College, to the Poor Farm and one or two other donations, embracing in all about 150,000 acres, should be agricultural land, i. e., land susceptible of irrigation. It was also the opinion of the Board that this land should be selected at once. Owing to the importance of the institutions which were to be benefitted by these donations unusual care was taken in the examinations of the land recommended for selection. Water Division No. 3 was regarded as the most suitable locality in which to make the selection. The institutions to be most benefitted are located in this division. It has the largest area of irrigable land and the best water supply. No land had been selected in this division. The State Engineer recommended the land north of the Stinking Water or Shoshone River and the plateau between the Grey

Bull and Stinking Water, this recommendation being based on an examination made in 1892. The lands ultimately selected were first examined by N. H. Brown, Superintendent of Division No. 3, and afterwards by Jack Dow, Superintendent of Water Division No. 2, and the State Engineer. The examination resulted in a recommendation for the selection of 127,000 acres north of the Stinking Water River, being a part of the land embraced under the projected Tich Pa Wah Nah Canal, which was surveyed after the making of this selection, and 26,000 acres on the plateau between Grey Bull and Stinking Water, in all 153,000 acres. The reason for recommending this land is that it is first class agricultural land, and that the expense of building ditches is too great for individual enterprise, the estimated cost of the Tich Pa Wah Nah Canal being $2,000,000.

In explaining this recommendation to the State Land Board the State Engineer pointed out the fact that these selections omitted purposely all land which could be reclaimed by individual effort. That along these two streams, and the Big Horn River, there was left untouched over four hundred thousand acres of irrigable public land and that the settlement of this would require many years to complete it. That it was his belief, which has not since been modified, that this selection would provide an adequate endowment fund for the State Agricultural College and relieve tax payers of this burden; that the selection of this land by the State did not necessarily restrict settlement, but would make it an object to the State to promote the settlement and reclamation of this region. That the chances for the settlement and reclamation of this land under State ownership, even with the ten dollar limitation, were fully as favorable as under federal land laws. At the time of the visit of the different members of the Board of Control to the Big Horn Basin, the object of the visit was stated. When the recommendation was made to the Land Board interested parties were notified and several hearings were held. These statements are necessary because an attempt was made afterwards to arouse prejudice against the selection by charging it was made "secretly" and that it was "an attempt to injure the northern part of the State."

At the hearing three parties appeared to protest against the selection. One was not a citizen of the State and could not be supposed to have a greater interest in Northern Wyoming than the Superintendents of the Northern Water Divisions who joined in the recommendation. While it is admitted that the protestants were all sincere and acting for both public and private interests, it is submitted that not one of them had made the careful examination of the selection that had been made by each of the members of the Board of Control who joined in the recommendation. Nor had any of them had greater acquaintance with the causes operating to promote or retard the settlement of arid land. The parties objecting urged the land would be at once reclaimed if left open to the public; the members of the Board of Control did not believe it would, so long as so much land more cheaply irrigable was open to settlement. Results have vindicated the soundness of their view. The recommendation was not approved; the land was left open.

It is now a year and a half since this recommendation was disapproved. The land has been open to settlers and ditch builders during this time. The parties protesting have had unrestricted opportunity to make good the promise of immediate reclamation. What has been the result? *Not a yard of ditch has been built*; *not a filing made on the land embraced in the recommendation.*

The action of the Board of Control was not taken hastily or unadvisedly. The members had studied the problem for three years. The conclusions of Mr. Dow were the result of 25 years' experience as an Engineer in the west, half of which time has been spent in this State. Mr. Brown has been for ten years a builder of canals in the region most concerned. The State Engineer took one month, from a year crowded with duties and responsibilities, to make a second examination of the region to be affected. There was no personal interest to be served, but an important public duty to be performed, and all concerned still believe it was properly attended to. The time which has succeeded has failed to show wherein error was committed and the State Engineer ventures to predict it will continue to do so and that if the land north of the Stinking Water is left to be reclaimed under present land laws, it will be as arid a solitude in a hundred years as it is now.

Some six months after the matter had been disposed of, some irresponsible savior of the State started a report that the State Engineer had recommended the selection of 576,000 acres of irrigable land in the valley of the Grey Bull and Stinking Water Rivers. A letter of inquiry, or telegram to the State Land Board, would have shown that 576,000 acres could not be recommended when there was only 260,000 acres to select; that only one-fourth of this area had ever been recommended and that its rejection had become ancient history. Instead of such inquiry the unsupported statement was accepted, and the State Land Board was overwhelmed with protests against this mythical selection. The State Engineer was away from the Capital, but the office was deluged with telegrams. The Town of Sheridan passed a resolution protesting against the *State monopolizing* over half a million acres of land.

So long as such intense prejudice is manifested against this donation, the Board of Control regards it as manifestly unjust that it should be called upon to carry out the provisions of a law which requires that the land donated by Congress shall be *immediately* selected. Believing that laws were made to be obeyed, they do not wish to be charged with this duty without fulfilling it. The three members who examined the lands recommended have not changed their opinion, and if it was not a wise and judicious selection, then it is not possible for them to make such selection and it is useless to continue this Special Commission.

Another example of the prejudice to be encountered in dealing with this problem was shown by one of the selections made by the Superintendent of Division No. 1, Mr. J. A. Johnston. In the year 1892, he recommended the selection of 15,000 acres of land lying along Crow Creek. The land was selected as grazing lands because of an offer made by Mr. Andrew Gilchrist to lease such land in case of its selection and because of the fact that the previous sale and improvement of the surrounding lands gave to this land an exceptional value in case of attempted sale by the State. A portion of this selection, less than ten per cent. of the whole, lay within what was called the Silver Crown Mining District. It was the belief of Mr. Johnston, at the time of making this recommendation, that this portion of the land was more valuable for grazing purposes than for mining purposes. Whether or not this belief was well founded, there is much to be said in its behalf. There has never been a paying mine discovered in that district Its history thus far has been simply that of a sink hole for the money spent in prospecting. There is nothing in either the past history of the entire Silver Crown Mining District or its present prospects to make unreasonable the belief of Mr. Johnston that the only value the land has is its value as grazing land.

Each of the papers of Cheyenne at the time he recommended the land mentioned the fact that such recommendation was being made, but nothing was done by parties interested in the mines to prevent the selection by the Land Board, which selection was made. After such selection had been confirmed by the United States, parties interested in the mining development of that region interested themselves in securing its rejection; the Land Board and the Superintendent of Division No. 1 were denounced in unmeasured terms as being engaged in a land steal. The injustice of this accusation can be understood at once from the statement that the selection was not made for the benefit of Mr. Johnston, but for the State and that after his recommendation he had no further influence in the management or disposal of the property. Neither is there any possible means by which the State Land Board could have benefitted by the selection.

Granting the mineral character of the land within the mineral district, the claimants thereon were not necessarily injured by the selection. They could have purchased it from the State for a less outlay than is required to secure title to mineral land from the United States. The only valid objection to the selection was the fact that it is opposed to the spirit of the grant which does not contemplate the acquirement by the State of such land. The cancellation of the selection of the land, within the mineral district, was proper, if it has any mineral value, but there was no reason for the cancellation of the remaining thirteen thousand acres of this selection. There is no more reason for regarding it as mineral land than there is the streets of Cheyenne. The State Engineer can speak of this with perfect freedom, he neither knew of the selection when made, nor was ever consulted in regard thereto by the Land Board or the Superintendent of Division No. 1.

In conclusion it is proper to state that while this history of the selections of State lands has been deemed necessary in order to explain the position of the Board of Control, it is not intended in any way to reflect upon the action of the State Land Board in not approving recommendations.

Every member of the Board of Control is of the opinion that the minimum price of ten dollars per acre for State Lands is an unwise provision; that not only is it above the value of the unimproved land, whether irrigable or otherwise, but that every increase in cost tends to restrict the settlement and development. Personally, the State Engineer does not believe that the restrictive influence of this ten dollar an acre provision in the case of large projects is any more effective than the unsatisfactory character of federal land laws. So far as selections of grazing land are concerned he is opposed to them, and having recommended the selection of over 200,000 acres of irrigable land without any of the recommendations being approved; knowing that no other selection of irrigable land worth having can be made which will not be open to the same or greater objections than those offered to the ones before made, he respectfully submits that he has wasted time and labor enough.

ERRATUM.

In 1st line of 3rd recommendation, for "subsequent" read "supplemental."

RECOMMENDATIONS.

1st: That the law provide a fee of $2.00 for the examination, recording and filing of plats of "Applications for Permits to Appropriate Water."

2nd: That Sec. 23 of the Water Laws be amended so that the Superintendent may fix the time of hearing contests; that notice of contest must be given within fifteen days after the opening of proof for inspection; that provision be made for the compulsory attendance of witnesses in contest cases and their payment for such attendance.

3rd: That there be subsequent legislation to provide for the leasing and management of hot springs.

4th: That the Law which makes the State Board of Control a Special Commission to select State Land be repealed.

5th: That Sec. 34, of Chap. 8, Session Laws of 1890-91, be amended so that applications for permits shall require parties receiving such permits to divert shall begin the actual construction of ditches within six months from the approval of said permit.

6th: The recommendations of the Division Superintendents are commended to the attention of the Legislature.

REPORT

—OF—

Superintendent of Water Division No. 1.

ELWOOD MEAD,
President State Board of Control.

SIR:

I herewith submit the following report of the work done in Water Division No. 1, during the last two years. Owing to my absence from the State in 1893, the work was in the hands of a deputy, E. S. Johnston having been regularly appointed to that position.

The unfinished business mentioned in my first annual report was completed at the March meeting of the Board of Control by a decree rendered in each case as follows:

STREAM.	COUNTY	TRIBUTARY.	NO. OF CERTIFICATES.
Elkhorn Creek	Natrona	Platte River	12
Calvin "	"	" "	1
Dobbins Spring	"	" "	1
Loomis Creek	"	" "	1
Dry Muddy "	"	" "	2
Squaw "	"	" "	2
Gordon "	"	" "	8
Muddy "	"	" "	33

STREAM.	COUNTY.	TRIBUTARY	NO. OF CERTIFICATES.
Snake River	Carbon	Green River	32
Savery Creek	"	Snake "	31
Muddy & Cow Cks	"	" "	5
Battle Creek	"	" "	4
Pine Tree "	"	" "	2
Separation "	"	" "	8
Horse Shoe "	"	N. Platte River	33

Making a total of 175 Certificates issued. As a result of the decrees rendered in all the above adjudications but one notice of appeal to the courts has been received, that being an appeal from the decree rendered on Separation Creek, in Carbon. The status of the case is at present unknown as nothing has been heard from the matter since the notice of appeal was filed.

During 1893, the following new work was taken up. Decrees rendered and Certificates issued as follows:

STREAM.	COUNTY.	TRIBUTARY.	NO. OF CERTIFICATES.
Alkali or Spring Creek	Albany	Laramie River	2
Rawhide "	Laramie	N. Platte "	12
Muddy "	"	Pole Creek	13

Making a total of 27 Certificates issued.

The adjudication of Shell Creek, in Albany County, which was taken up early in 1893, was never completed on account of the description of lands irrigated given by one of the principal appropriators on the stream being incorrect, according to the Engineer's plat. This party has been requested repeatedly by the Superintendent to correct his testimony but has failed to do so. As a decree rendered from the testimony as it now stands would be a manifest injustice to all parties concerned, no conclusive action has been taken.

During 1894, no testimony for adjudications has been taken in this Division, all the work being done in Divisions Nos. 2 and 4.

WATER COMMISSIONERS.

There has been a constant call from the various Water Commissioners throughout these divisions for information or instructions in relation to their work during the irrigation season. To do this part of the Superintendent's work satisfactorily he should have a complete knowledge of the conditions that prevail in each separate locality or stream so that he can give his instructions with a view of obtaining the best results under the decrees rendered.

During the last two years, with few exceptions, the work of Water Commissioners has gone on smoothly and with very little friction. They acquire a knowledge of their duties and give better satisfaction as a rule as their term of service lengthens. Consequently,I have made no recommendations for new appointments even after the terms for which they have been appointed have expired. I would recommend that the time for which they are appointed be extended from two to four years as it takes a man unaccustomed to the work one season at least to become familiar with the streams, and how to get the best results from the water therein. This office is one of the most important provided for under our water laws and the incumbents should be men of integrity and good judgment, as the area irrigated from over appropriated streams can be greatly increased or diminished by the proper or improper division of the water.

The question was raised during the last summer as to what constituted a legal headgate, and whether the Water Commissioners were authorized to regulate ditches unless they were provided with headgates in compliance with Sec. 46 of the Water Laws. We were informed by the legal fraternity that they were not.

In view of this fact I would recommend that some legislation be enacted that will give the Water Commissioner the authority to regulate ditches at all times after the decree has been rendered and that any dam or other obstruction placed by him in the head of a ditch be respected until the above named section of our Water Laws has been complied with.

Under our present law there appears to be some question as to the standing in our courts of an appropriator of water who at the time designated neglects or refuses to submit testimony to the Division Superintendent for the purpose of establishing his appropriation. There has been a case of this kind in the Court of Laramie County which was settled by an agreed decree and another is now pending.

I would recommend that some legislation be enacted setting forth the proper procedure for the determination of these cases.

Respectfully,
J. A. JOHNSTON,
Supt. Division No. 1.

REPORT

—OF—

SECRETARY OF BOARD OF CONTROL.

The following is a list of the work done by the Superintendents of Divisions Nos. 2, 3 and 4.

DIVISION NO. 2.

STREAM.	COUNTY.	TRIBUTARY.	NO. OF CERTIFICATES.
Beaver Creek	Crook	Belle Fourche	4
Pass "	Sheridan	Tongue River	3
Twin "	"	" "	2
Big Goose "	"	" "	13
Red Water Ck. and tributaries	Crook	Belle Fourche	13
Salt Creek	"	" "	1
Oil "	Weston	" "	2
Running Water	Converse	Niobrara	19
Belle Fourche	Crook		27

DIVISION NO. 3.

STREAM.	COUNTY.	TRIBUTARY.	NO. OF CERTIFICATES.
Beaver Creek	Fremont	Big Horn River	8
N. Fork of Popo Agie	"	Popo Agie River	46
Squaw Creek	"	Baldwin Creek	11
Big Popo Agie	"	Wind River	98
Twin Creek	"	Little Popo Agie	13
Willow "	"	" " "	12
Red Canon	"	" " "	3
Deep Creek	"	" " "	2
Barrell "	"	" " "	1
Cherry or Norton Creek	"	" " "	3
Crooked "	"	" " "	1
Hornecker "	"	" " "	14
Little Popo Agie	"	" " "	30
Commissary Springs	"	Twin Creek	1
			243

No work has as yet been reported from Division No. 4 for the action of the Board, but I am informed that testimony is now being taken in the Salt River and tributary adjudications and will be submitted at an adjourned meeting of the Board during the latter part of December of this year.

At the last meeting of the Board the Superintendent of Division No. 2 reported a vast amount of incomplete work, a great deal of which will be submitted at the December meeting for final action by the Board. The reasons assigned in many of these cases for their not being reported sooner is that contests have been filed and the Superintendent, under the present law, has been unable to precipitate a hearing in the cases. The delays encountered by the Superintendent of Division No. 2 is one of the best arguments in favor of amending Sec. 23 of the Irrigation Laws so that he may be authorized to name the time when contests shall be heard.

I wish to renew my recommendation made two years ago that the office of the Secretary of the Board of Control be made a salaried office as the duties of the office are constantly increasing and he should be continually in attendance there. That it be a part of his duties to become familiar with the records of the State Engineer's office so that he be competent to serve the public during the necessary absence of that officer from the Capitol.

Respectfully,
J. A. JOHNSTON.

Abstract from the Report of Jack Dow, Superintendent of Water Division No. 2.

The Superintendent of this Division reports that the services of Water Commissioner Donegan, of District No. 1, were required during the past two years in dividing water among appropriators from Running Water; that considerable difficulty was experienced in securing a satisfactory division of water in District No. 5. One of the causes of this difficulty is the diversion of the water of Columbus Creek into the drainage of Five Mile Creek, which deprives the appropriators from Columbus Creek of the benefit of seepage or waste water. Owing to the fact that the appropriators along Five Mile Creek have the earlier priority numbers, nothing could be done for the relief of those injured along Columbus Creek. There are a number of streams in this district which have an in adequate water supply. The only relief for the latter appropriators is apparently to be found in storage.

The Superintendent recommends that the law providing for hearing of contests will fix a limit within which contestants may give notice of making such contests

He also joins with the Superintendent of Division No. 4 in recommending that the Superintendents shall fix the time of hearing such contests.

Abstract from the Report of N. H. Brown, Superintendent of Water Division No. 3.

The Superintendent of Water Division No. 3 reports that the determination of rights of appropriators from the different branches of the Popo Agie River and its tributaries, as made by the Board of Control in 1893, has been approved by the settlers along those streams, and no appeals have been taken to the courts from the determinations of the Board.

Two Water Commissioners served during 1894, in protecting the rights of appropriators on these streams. The principal streams on which the necessity for the action of a Commissioner has arisen are Twin Creek, in District No. 1, and Baldwin Creek, in District No. 2.

Abstract from the Report of A. D. Chamberlin, Superintendent of Water Division No. 4.

EVANSTON, WYO., Oct. 6th, 1894.

ELWOOD MEAD, Esq.,
State Engineer,
Cheyenne, Wyo.

SIR:

I have the honor to herewith submit to you my report of the condition of irrigation in Division No. 4.

I have not generally visited my Division this year, and have at present La Barge Creek and Salt River under adjudication.

On a recent visit to La Barge Creek, I had the pleasure of meeting every appropriator of water on that stream, and to my inquiries as to crops, it was universally answered that they were never in a better condition, having had an abundance of water, and becoming more familiar each year with the use of water, they are each year securing better results from irrigation.

Hay is the crop most generally grown on the above named streams; most of the ranchers are turning their attention to the growing of tame hay—principally timothy—and are raising large crops of a very fine quality. The ranchers' preference for timothy to alfalfa is due to the fact that timothy is hardier and not so liable to be injured by either early or late frosts. The advantage over native hay is a much larger tonnage to the acre, for the same amount of water used, which is a great advantage where the scarcity of water must be taken into consideration.

In addition to the growing of tame hay, some of the ranchers have raised quite large crops of oats. I cannot give any figures of the yield per acre, as all of the oats were cut and stacked to feed without thrashing it. By those who have raised oats on La Barge Creek, it is claimed that oats of a superior quality will mature and make a very large yield per acre. All of the hardier kinds of vegetables—such as potatoes, beets, radishes, onions, carrots, peas and lettuce—can be successfully raised on the creek—the system of irrigation being quite complete.

There has been quite an increase of settlers on Black Fork around Ft. Bridger this summer; part of the new setters settling under the Carter Canal, and part taking lands under the South Canal—both canals taking water from the Black's Fork.

These canals were taken out by enterprising citizens of Uinta County, to induce settlers to locate on the fertile lands, capable of irrigation by the two canals. For a few years it looked like a doubtful speculation, but from the way settlers are taking up lands watered by these canals, this summer, it has given the promoters of both enterprises good reason to believe that their enterprises will prove a success from a financial standpoint, and that the bench lands below these canals can be successfully irrigated and farmed, which is already shown by the fact that the first settlers on these lands, and who have each year since cultivated them, have made a success of their farming. I am informed that wheat, oats and potatoes have been successfully raised on these lands this summer, as well as all of the hardier vegetables. These successful experiments of taking out canals to induce settlers to locate on the lands irrigated by them will stimulate others with capital to invest in similar enterprises in different parts of the State, and especially in Division No. 4, where a great many such opportunities offer themselves to capital, where canals, capable of irrigating large tracts of land, can be constructed at cost of a few thousand dollars. Reasonable rentals for water rights will bring fair interest on the investment—thus throwing thousands of acres of our now vacant lands under irrigation and cultivation.

The yield of some of the crops raised by irrigation within the city limits of Evanston, and adjoining it, are remarkable.

One crop of potatoes is worthy of mention in this report. It was raised by Mr. Wm. Lauder, who planted one-half of an acre to potatoes, which yielded by weight sixteen thousand pounds, of a very fine quality. These figures are a much stronger, argument for the productiveness of our soil than any words of mine could possibly be. Another crop grown on the lands adjoining the town is worthy of mention. It is the field of one hundred and twenty-five acres of hay—a mixture of timothy and alfalfa—grown by Mr. A. C. Beckwith. The yield of hay for one cutting was, by measure, two hundred and seventy-five tons, making an average of two and two-tenths tons per acre.

I have not in this report selected any of the items specially mentioned for the remarkable yields, but simply to give an idea of the crops that can be raised at an altitude of six thousand feet, and over. They are not isolated cases, as I could mention many others equally as good.

In conclusion, I wish to call attention to the fact that the lands in Division No. 4, are well adapted to agricultural purposes. Irrigation is being actively carried on throughout most of my Division, and where I have the streams in course of adjudication, there is great interest taken in perfecting titles to water, and I find most of the claimants of water fully alive to the necessity of complying with the requirements of the law.

The adjudication of La Barge Creek and Salt River will be ready and complete for report to the Board of Control by the end of the year. There are about thirty claimants of water on La Barge Creek, and about two hundred and fifty on Salt River.

Not having been in Salt River Valley this summer, I can give no report as to the crops and condition of irrigation in that valley.

Yours, etc.,

A. D. CHAMBERLIN,

Superintendent Water Division No. 4.

Mr. Chamberlin makes the following recommendations in regard to needed legislation:

That the section of the Irrigation Laws which provides for the hearing of contests before the Division Superintendent be amended so as to provide that the Superintendent shall fix the date for hearing such contests; that he be empowered to subpœna and enforce the attendance of witnesses in such cases.

He also recommends a change in present law so that the State Engineer will be authorized to employ a secretary who shall be ex-officio secretary of the Board of Control instead of having one member of the Board perform these duties as at present. The following is the reason for the latter recommendation:

"I make this recommendatian for the reason that it takes too much of the appropriation made for the Board of Control to pay for clerical work. I think the money could be spent to a much better advantage in field work. I find in my division there is great need of field work to secure the full benefits of our laws in regard to irrigation."

OPINIONS OF ATTORNEY GENERAL

RENDERED IN 1893 AND 1894.

WATER RIGHTS ON MILITARY RESERVATIONS.

Abstract of opinion of Attorney General in letter of November 30th, 1891:

Occupants of lands on Fort Sanders Military Reservation are entitled to appropriations of water made by them prior to the Act of Congress providing for disposal of said lands.

STATE OF WYOMING
ATTORNEY GENERAL'S OFFICE
CHEYENNE.

Correction of Mistakes in Evidence before Board of Control.

March 3rd, 1892.

Hon. Elwood Mead,
State Engineer,
Cheyenne, Wyoming.

Dear Sir:

I am in receipt of your favor of the 24th, stating that some mistakes were inadvertently made by various parties in giving their testimony in the matter of the adjudication of the priorities of rights to the use of waterfrom the Little Laramie River, in that some of the witnesses have evidently mis-described the lands which have been irrigated from their ditches, and you ask me if the Board will be authorized to use certain information which has been obtained by the State Engineer, in the preparation of a map, under the provisions of Section 24, to correct the errors of location of irrigated lands, and whether the Board can make such corrections without giving a hearing to the interested parties; or whether the Division Superintendent, the provisions of Sections 20 to 24, inclusive, having been complied with, and no contests having been instituted, can call the attention of the parties to these errors and submit their testimony to a second inspection, to secure corrections; or, third, whether interested parties would have the right to begin proceedings at this late date to correct such manifest errors?

As I understand it, the errors are in the location of the lands, and that the mis-descriptions have been the results of simple mistakes, and that there will be no question about their correction if an opportunity is given.

In my judgment, this matter can be arrived at so that all parties will be protected, by making your proceedings analogous to trials in court. It is in the discretion of the court, before judgment, to permit a witness to correct his testimony, where it appears that such correction is desired for the purpose of curing a mistake which the witness has unintentionally made in giving his former testimony.

I suggest therefore, that the Division Superintendent notify the parties in relation to the evident mistake, and learn if they wish to make the correction. It they then request that they be given an opportunity to correct their testimony, to correct such mistake, that you give notice to all parties that the Division Superintendent will hear these parties at a certain time and place for the purpose of having their former testimony corrected, as to the particular matter suggested, and I would advise that you do not make the notice for hearing so broad as to cover anything but the mere correction of the description of the lands, in the testimony of such parties as desire to make the correction.

Yours very truly,
C. N. POTTER,
Attorney General.

STATE OF WYOMING
ATTORNEY GENERAL'S OFFICE
CHEYENNE.

Appropriation of Water on Shoshone Indian Reservation.

November 14th, 1894.

HON. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyoming.

DEAR SIR:

You have handed me the application of Edward T. Peyton, Cheyenne, Wyoming, for a permit to appropriate water from what is known as the Big Horn Hot Springs, located on the right bank of the Big Horn River, on the Shoshone Indian Reservation, by means of a pipe line to be known as The Big Horn Hot Springs Savior Pipe Line Canal,said water to be used for medicinal purposes and to supply bath houses,and you verbally request my opinion as to whether the State of Wyoming has such jurisdiction over said Hot Springs as would authorize you to approve said application.

As I understand it, all of said Hot Springs are located within the boundaries of the Shoshone Indian Reservation and possess medicinal qualities.

Said application is presented at your office for the approval of the State Engineer, in pursuance of the provisions of Section 34, of Chapter 8 of the Session Laws of 1890-91. It is provided by that Section that an application for the appropriation of water presented to the State Engineer shall be approved by him by endorsement thereon, if there is unappropriated water in the source of supply named in the application, and if such appropriation is not otherwise detrimental to the public welfare; and it is further provided that the State Engineer shall refuse such application, if in his judgment such appropriation is detrimental to public interests.

The general right to refuse your approval of an application to appropriate water of this character and for the purpose indicated, I take it to be clearly understood by you. Whether or not, however, by such an application and your approval thereof, any right could be granted to the applicant, depends entirely upon the legal effect of the reservation of the lands upon which said springs are located, for the benefit of the Shoshone Tribe of Indians.

Said Reservation was provided and set apart under treaty between the United States of America and the Eastern Band of Shoshones and the Bannock Tribe of Indians, concluded July 3rd, 1868, the ratification of which was advised by the Senate of the United States, February 16th, 1869, and was proclaimed February 24th, 1869. By the provisions of Article II of that Treaty, the territory embraced within said Reservation was set apart for the absolute and undisturbed use and occupation of the Shoshone Indians and for such other friendly tribes or individual Indians as from time to time they may be willing, with the consent of the United States, to admit amongst them; and it was further thereby agreed that no persons except those designated therein and authorized so to do, and except such officers, agents and employees of the Government, as may be authorized to enter upon the Reservation in discharge of duties enjoined by law, shall ever be permitted to pass over, settle upon or reside on the territory embraced within said Reservation.

Congress has also at various times enacted laws providing for the protection of the Indians in their reservation rights and authorizing the proper officers of the United States to eject from such reservations any one unlawfully thereon.

The Ordinances adopted by the Convention which framed the Constitution of the State of Wyoming, which are irrevocable without the consent of the United States and the people of this State, provide in Section 3, that the people inhabiting this State so agree and declare that they forever disclaim all right and title to all lands owned or held by any Indian or Indian tribes, and until the title thereto shall have been extinguished by the United States, the same shall be and remain subject to the disposition of the United States, and that said Indian lands shall remain under the absolute jurisdiction and control of the Congress of the United States.

The second State Legislature, by an act entitled, "An Act Ceding to the United States Jurisdiction over Certain Military Posts and Lands and the Shoshone Indian Reservation," approved February 17th, 1892, ceded to the United States exclusive jurisdiction over and within all of that territory embraced within the boundaries and limits of what is known as the Shoshone Indian Reservation, saving only to the State the right to serve civil and criminal process within said Indian Reservation in suits or prosecution for or on account of rights acquired, obligations incurred, or crimes committed in said State, but outside of said Cession, and said Indian Reservation, and the right to tax persons and corporations, their franchises and property on said Reservation.

The above briefly covers the legislation and treaty provisions in point, respecting said Reservation; and from a consideration thereof it is very clear that the State has no present ownership or control of the Hot Springs located entirely within the boundaries of said Indian Reservation, and that neither the Legislature, nor any officer of the State, can grant any right to, control or ownership in said Hot Springs, or any of the waters thereof, to any person or persons whomsoever.

Whatever contingent right or ownership the State may have in said Hot Springs is entirely subject to the right of the Government of the United States and of the Shoshone Tribe of Indians, under and by virtue of the provisions of said treaty.

Any one going upon said Reservation and constructing a pipe line from said Hot Springs, with the purpose of appropriating some of the waters thereof, and conveying the same to some locality off the Reservation, without the consent of the Indians and of the Government of the United States, would be a trespasser; and any application for that pupose made to your office and any approval thereof by you would not alter that situation.

I am, therefore, of the opinion, that in your capacity as State Engineer, you could not, by an approval of the application of Mr. Peyton, grant him any right to appropriate any of the waters of the Big Horn Hot Springs, unless he should first legally obtain the consent of the Indians and the United States to such appropriatioh.

We are not entirely without precedent upon questions of this character, as the relative jurisdiction of the State and the United States, over Indian Reservations, has demanded the frequent consideration of the Courts, both Federal and State, and a reference to two,the reports of which are now before me, will illustrate the view which the Courts have taken of this matter.

In a recent case decided by the Supreme Court of the State of New York, Buffalo R. R. P. R. Company vs. Lavery, reported in 27 N. Y., Sup., 443, the legality of various leases to lands within the Alleghany Indian Raservation, granted from the Seneca Nation of Indians, was under consideration, and it appears that a certain railroad company claimed a right of way across said Indian Reservation by virtue of leases which it had obtained from the said Seneca Nation of Indians. Congress in 1875 had regulated the granting of such leases, but it seems that in 1836 the Legislature of the State of New York had enacted a law providing that it should be lawful for any railway company, chartered by the Legislature of that State, to contract with the chiefs of any nation of Indians, through whose lands it might be necessary to construct such railroad, for the right to make such road upon such land, and reference was made to this law in the case cited. But the Court said: "It is not within the legislative power of the State to enable the Indian Nation to make, or others to take from the Indians, grants or leases of land within their reservations. In that matter, the Federal Government having the power, under the Constitution, to do so, has assumed to control it by the act of Congress of June 30, 1834, which provides, "that no purchase, grant, lease or other conveyance of lands, or of any title or claim thereto from any Indian Nation or tribe of Indians, shall be of any validity, in law or equity, unless the same is made by treaty or convention entered into pursuant to the Constitution." "As respects their lands, which, subject only to the pre-emptive title, the Indians hold, they are treated as the wards of the United States; and it is only pursuant to Federal authority that their lands can be granted or demised by or acquired by conveyance or lease from them."

In the case of United States vs. Thomas, (reported in 14 Supreme Court Reporter, page 426), which is a recent case decided in the United States Supreme Court, upon a certificate of division between the Circuit Judge and the District Judge, before whom the case was originally tried, in the State of Wisconsin, the question arose whether a crime committed upon Section Sixteen, within the limits of the La Court Oreilles Reservation, which was set apart for the Chippewa tribe of Indians, could be prosecuted in the Courts of the United States, in view of the fact that every Section numbered sixteen had been granted to the State of Wisconsin as school land, and no lands had been selected by the State in lieu of this particular section located within said Indian Reservation.

The Court say: "We, therefore, are of the opinion that by virtue of the treaty of 1842, in the absence of any proof that the Chippewa Indians have surrendered their rights of occupancy, the right still remains with them, and that the title and right which the State may claim ultimately to the sixteenth section of every township, for the use of schools is subordinate to this right of occupancy of the Indians, which has, so far as the Court is informed, never been released to any of their lands, except as it may be inferred from the provisions of the treaty of 1854. That treaty provides for permanent reservations, which included the section in question. The treaty did not operate to defeat the prior right of occupancy to that particular section,but by including it in the new reservations, made as a condition of the cession of large tracts of land in Wisconsin, continued it in force. The State of Wisconsin, therefore, had no such control over that section or right to it as would prevent it being set apart by the United States, with the consent of the Indians, as a part of their permanent reservation. So, by authority of their original right of occupancy, as well as by the fact that the section is included within the tract set aside as a portion of the permanent reservation in consideration of the cession of lands, the title never vested in the State, except as subordinate to that right of occupation of the Indians."

And again, "the Indians of the country are considered as the wards of the Nation, and whenever the United States set apart any land of their own as an Indian Reservation, whether within a State or Territory, they have full authority to pass such laws and authorize such measures as may be necessary to give to these people full protection in their persons and property, and to punish all offenses committed against them or by them within such reservations."

And so it was held that a crime committed by an Indian upon said Section Sixteen, in a township included in said Indian Reservation, was within the jurisdiction of the Courts of the United States.

While these cases are not immediately in point, they are sufficiently analogous to illustrate the position assumed by the Courts with respect to jurisdiction over and the control of the lands situated within the boundaries of an Indian Reservation.

You also verbally request my opinion respecting your right to approve any application which might be presented at your office to take water from the Big Horn River, at any point located within the boundaries of said Indian Reservation. I do not understand that any such application has up to this time been presented at your office, but that you desire to be informed respecting the propriety of your approval of such an application should one at any time be presented.

In this connection permit me to say that should any application of that character be presented by any one who had a legal right to enter upon said reservation for the purpose indicated, in my judgment, you could with perfect propriety approve such application should the same meet with your approbation in other respects, for the reason that there might be and probably are other appropriators of water from said stream, or its tributaries, at various points north as well as south of said Indian Reservation, and while your approval would not have the effect of giving to the applicant the right to go upon said Indian Reservation, and construct a pipe line, it would have the effect of furnishing a basis for the subsequent determination of the relative priorities between appropriators of water from said stream and its tributaries, whether on or off the Reservation.

The distinction which I desire herein to suggest between the waters of the Hot Springs and of Big Horn River consists in this; that in the case of the Springs, the waters thereof can not be appropriated without going upon the Reservation for the source of supply, while the waters of the river can be appropriated by tapping the stream at points off the reservation. Therefore, as a matter of protection to appropriators off the reservation as well as those taking water from said River at any point, within said reservation, having the legal right to enter or occupy that territory for such a purpose, it is proper that a record should be made of all such appropriations.

I have in mind the possibility of the Indians themselves or the government for their benefit, making such an appropriation within the Reservation. In such a case, applications therefor could be with perfect propriety and ought to be approved, if in other respects such an application is not subject to objection.

Yours truly,
C. N. POTTER,
Attorney General.

STATE OF WYOMING,
ATTORNEY GENERAL'S OFFICE,
CHEYENNE.

Application for a Permit for Enlargement of a Ditch must Precede a Certificate of Appropriation.

November 7th, 1893.

HON. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyoming.

DEAR SIR:

* * * * * * *

The second question which you submit to me is based upon the following facts, viz:

In 1891, a permit for the enlargement of the Davis-Folsom & Brewer Ditch in Carbon County was issued by the State Engineer, upon the application of Isaac C. Miller, President of the Company, and such application was in the usual form and described the land which the proposed enlargement was to irrigate and the permit was to expire May 1st, 1894.

During the summer of 1893, notice was received by you from Mr. Brewer, stating that the enlargement of the Brewer Ditch had been completed and that a certificate of appropriation for water sufficient to irrigate 320 acres of land was desired by Mr. Robert A. Day.

It seems that Mr Brewer was a part owner of the Davis-Folsom & Brewer Ditch, the same being owned by a Company, and that the application for the permit by the President of the Ditch Company for the enlargement as aforesaid, completes the official record in your office. Subsequently said Company sold the ditch to the Saratoga Land & Improvement Company and Mr. Brewer as an individual procuring from the Company permission to enlarge the ditch and carry water to irrigate 320 acres of land, made the enlargement and sold such interest which he had obtained thereby in the ditch enlargement, together with the land irrigated, to Mr. Robert A. Day, and it is for this enlargement that Mr. Day applies for a certificate of appropriation from the State Engineer.

It appears also from your statement that the parties holding the present permit issued by your office in 1891 to enlarge the ditch, refuse to recognize the enlargement as made by Mr. Brewer, as coming under the provisions of said permit, as in fact it does not, and the question upon which you desire my opinion is whether you or the State Board of Control have authority to issue a certificate to Mr. Day for such enlargement and appropriation thereby under the provisions of Section 36 of Chapter 8 of the Session Laws of the First State Legislature.

Section 36 referred to, provides as follows, to-wit:

"Upon it being made to appear to the satisfaction of the Board of Control that any appropriation made in pursuance of the application in this act provided for, has been perfected in accordance with such application and the endorsement thereon by the State Engineer, it shall be the duty of the State Board of Control, by the hand of its President, attested under the seal of the Secretary, to send to the County Clerk, certificate of the same character, as that described in Section 26, of this act, which said certificate shall be recorded in the office of the County Clerk, as provided in Section 28 of this Act."

By reference to Sections 34, 35 and 37, in connection with said Section 36, it will appear that it is required of every person desiring to construct, enlarge or extend any ditch, or distributing works, for the carrying of water, to make application to the Board of Control for a permit to make such appropriation. The application must contain a statement of several facts specified in Section 34, which will duly and properly inform the Board of Control and the State Engineer of the character of the work to be performed, and if sufficient in itself, and if there should be a sufficient amount of unappropriated water in the stream to justify it and such appropriation as is desired is not deemed detrimental to public interests, a permit is given to the applicant to construct, enlarge or extend the work as the case may be.

Within six months after the allowance or approval of the application, it is required that the applicant shall send to the Engineer's office a map or plat showing the location and amount of the distributing works, the source from which such appropriation is taken, and the legal sub-divisions of the land upon which the water to be appropriated is to be applied, which map or plat, it is provided, shall be filed and preserved in the office of the State Engineer.

The priority of any such appropriation dates from the filing of the application in the Engineer's office. (Section 37).

It therefore appears that the provision of Section 36 with reference to the issuance of a certificate of appropriation, is based entirely upon the application and the statements therein made together with the map or plat of the works, and that the priority acquired by the construction of such work, runs also from the time of the filing of the application. Without the application, the records of the Board of Control in the office of the State Engineer will not show the facts which it is proper and requisite to be shown under the provisions of Section 34, to entitle one to obtain a legal appropriation of water from a public stream.

Your letter informs me that the request for a certificate of appropriation, under the provisions of Section 36, is not based upon any application heretofore filed in your office or with the Board of Control, or any approval or allowance thereof.

I am therefore of the opinion, that before there can be any certificate of appropriation issued by you, as requested, an application must be made to your office, for a permit to make such enlargement, and the same must receive the approval and allowance provided for by law, and thereafter, when it is made to appear that the same is completed, and not until then, are you required to issue a certificate of appropriation.

The work having already been done, if it is a case in which you deem it proper to approve an application and grant a permit to make the enlargement and acquire the appropriation, the application could be made, and the same approved, a map filed and final certificate of appropriation issued without very much delay.

Yours Respectfully,
C. N. POTTER,
Attorney General.

STATE OF WYOMING
ATTORNEY GENERAL'S OFFICE
CHEYENNE.

Authority of the State Engineer to Extend Time for Completing an Appropriation.

May 24th, 1894.

HON. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyoming.

DEAR SIR:

In your communication of the 15th of March, 1894, you request my opinion as to your authority to grant an extension of time to complete the work necessary for the appropriation of water from the Laramie River, by the City of Laramie, the permit, which was number 26, having fixed the time for completing the appropriation, as April 7th, 1894.

After a careful examination of the Statutes, I have come to the conclusion that you have authority to grant an extension of time for the completion of the appropriation.

Just what effect such extension will have with respect to the permits issued and complied with after the issuance of the permit to the City of Laramie, and prior to the extension, it seems to me unnecessary to determine, and one perhaps which ought not to be determined by this office at this time. The least that can be said is that the question whenever it shall arise, will be found to be one of great delicacy.

Yours Truly,
C. N. Potter
Attorney General.

COMPILED WATER LAWS

OF THE

STATE OF WYOMING.

This compilation of the water laws of the State has been prepared in response to a constant demand for the same.

The additional information will, it is believed, be of service to the users of water and to those charged with its distribution.

CONSTITUTION OF WYOMING,

ARTICLE I.

Water control in state.

SEC. 31. Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved.

ARTICLE VIII.

IRRIGATION AND WATER-RIGHTS.

Water is property of state.

SECTION 1. The water of all natural streams, springs, lakes or other collections of still water, within the boundaries of the state, are hereby declared to be the property of the state.

Board of control.

Sec. 2. There shall be constituted a board of control, to be composed of the state engineer and superintendents of the water divisions; which shall, under such regulations as may be prescribed by law, have the supervision of the waters of the state and of their appropriation, distribution and diversion, and of the various officers connected therewith. Its decisions to be subject to review by the courts of the state.

Appropriation.

Sec. 3. Priority of appropriation for beneficial uses shall give the better right. No appropriation shall be denied except when such denial is demanded by the public interests.

Water divisions.

Sec. 4. The legislature shall by law divide the state into four (4) water divisions, and provide for the appointment of superintendents thereof.

State engineer.

Sec. 5. There shall be a state engineer who shall be appointed by the governor of the state and confirmed by the senate; he shall hold his office for the term of six (6) years, or until his successor shall have been appointed and shall have qualified. He shall be president of the board of control, and shall have general supervision of the waters of the state and of the officers connected with its distribution. No person shall be appointed to this position who has not such theoretical knowledge and such practical experience and skill as shall fit him for the position.

Article XIII.

May acquire water by appropriation and condemnation.

Sec. 5. Municipal corporations shall have the same right as individuals to acquire rights by prior appropriation and otherwise to the use of water for domestic and municipal purposes, and the legislature shall provide by law for the exercise upon the part of incorporated cities, towns and villages of the right of eminent domain for the purpose of acquiring from prior appropriators, upon the payment of just compensation, such water as may be necessary for the well-being thereof and for domestic uses.

REVISED STATUTES, 1887.

TITLE 19, CHAPTER 1.

When land-owner entitled to right of way—Damages.

SEC. 1318. When any person owning claims in such locality, has not sufficient length of area exposed to such streams to obtain a sufficient fall of water to irrigate his land, or his farm, or land used by him for agricultural purposes, is too far removed from said stream, and he has no water facilities on those lands, he shall be entitled to a right of way through the farms or tracts of land, which lie between him and said stream, or the farms, or tracts of land, which lie above, and below him, on said stream, for the purposes hereinbefore stated; *Provided*, That, in the construction, keeping up, and using any ditch through the lands of another person, the person or persons constructing or using such ditch, or whose duty it shall be to keep the same in repair, shall be liable to the person owning or claiming such land, for all damages accruing to such person by reason of said construction, keeping up and using such ditch. (C. L. 1876, ch. 65, sec. 2.)

Extent of right of way.

SEC. 1319. Such right of way shall extend only to a ditch, dyke, or cutting, sufficient for the purposes required. (C. L. 1876, ch. 65, sec. 3.)

Petition to commissioners—Notice of appointing appraisers.

SEC. 1320. Upon the refusal of the owners of tracts of land, or lands, through which said ditch is proposed to run, to allow of its passage through their property, the persons desiring to open such ditch may present to the county commissioners of the county in which said lands are located, a petition, signed by the person, or persons, describing, with convenient accuracy, the lands so required to be taken as aforesaid, setting forth the name, or names, of the owner, or other person interested, and praying the appointment of three appraisers to ascertain the compensation to be made to such owner, or persons interested. Upon the receipt of said petition, the said county commissioners shall give notice, at least thirty days prior to the appointment of the said appraisers, by public notice in a newspaper, when published in the county, or by posting three or more notices in three different places in said county, stating that such appraisers will be appointed on the .... day of ...., ... (C. L. 1876, ch. 65, sec. 5.)

Proceedings of appraisers—Payment of assessment.

Sec. 1321. The said appraisers, before entering upon the duties of their office, shall take an oath, to faithfully and impartially discharge their duties, as said appraisers. They shall hear the proofs and allegations of the parties, and any two of them, after reviewing the premises, shall, without fear, favor or partiality, ascertain and certify the compensation proper to be made to said owner, or persons interested, for the lands to be taken or affected, as well as all damages accruing to the owner or person interested, in consequence of the condemnation of the same, taken or injuriously affected as aforesaid, making such deduction or allowance for real benefits, or advantages, which such owner, or parties interested, may derive from the construction of said ditch or flume. They, or a majority of them, shall subscribe a certificate of their said ascertainment and assessment, which shall be recorded in the county clerk's office of the county in which said lands are situated, and upon the payment of the compensation, (if any), the said person or persons shall have the right of way to construct said ditch or flume. (C. L. 1876, ch. 65, sec. 6.)

Ditches to be kept in repair.

Sec. 1323. The owner or owners of any ditch for irrigation, or other purposes, shall carefully maintain the embankments thereof, so that the waters of such ditch may not flood or damage the premises of others. (C. L. 1876, ch. 65, sec. 8.)

Vested rights preserved.

Sec. 1324. Nothing in this chapter contained, shall be so construed as to impair the prior vested rights of any mill, or ditch owner, or other person, to use the water of any such water-course. (C. L. 1876, ch. 65, sec. 9.)

Ditches to be bridged.

Sec. 1325. Any ditch company constructing a ditch, or any individual having ditches for irrigation, or for other purposes, whenever the same be taken across any public highway, or public traveled road, shall put a good substantial bridge (not less than fourteen feet in breadth) over such water-course where it crosses said road. (C. L. 1876, ch. 65, sec. 11.)

When commissioners to bridge ditches —Expenses.

Sec. 1326. When any such ditch or water-course shall be constructed across any public traveled road, and not bridged within three days thereafter, it shall be the duty of the county commissioners of the county in which said ditch and road are located, to put a bridge over said ditch or water-course, of the dimensions specified in the foregoing section, and call upon the owner or owners of the said ditch or water-course, to pay the expenses of constructing said bridge, and if payment therefor be refused, a civil action may be maintained for the recovery of the same, together with all accruing costs. (C. L. 1876, ch. 65, sec. 12.)

Claim for right of way may be arbitrated.

Sec. 1327. Upon the refusal of the owner or owners of land or lands through which any person or persons are desirous of constructing any irrigation ditch or ditches, then it shall be lawful for the parties interested to settle the matter by the appointment of a board of arbitration consisting of three men as hereinafter provided. (S. L. 1882, ch. 57, sec. 1.)

Appointment and proceedings of arbitrators.

Sec. 1328. The creation of the board of arbitration shall be as follows: The person or persons desiring the construction of such ditch or ditches, and the owner or owners of the land or lands through which the construction of such ditch or ditches is contemplated, shall each choose one disinterested resident property-holder of the county in which the land or lands mentioned above are situated, and the two so chosen shall designate a third person with like qualifications as themselves, and it shall be lawful for these persons to immediately proceed to hear the proof and allegations of the parties concerned. It shall be lawful for any two of such board of arbitration to make such assessment of damages as may in their judgment be deemed just and right, taking into consideration the benefits, if any, that may accrue to the owner or owners of the land or lands through which the construction of such ditch or ditches is contemplated. (S. L. 1882, ch. 57, sec. 2.)

Appeal to commissioners.

SEC. 1329. Should the verdict or assessment of such board of arbitration be unsatisfactory to either or both of the parties interested, then recourse may be had by an appeal made in writing within ten days from the rendering of such verdict by such board of arbitration, addressed to the board of county commissioners of the county in which the contestants reside; in which case the party taking the appeal shall give bonds for all costs, then the case shall stand as though no action had been taken in the matter and the parties may then proceed under this chapter in the same manner as though the proceedings to ascertain the compensation to be given had been taken before the county commissioners in the first instance. (S. L. 1882, ch. 57, sec. 3.)

For proceedings before commissioners see secs. 1320 and 1321.

If no appeal taken award is final.

SEC. 1330. In case no appeal be taken as above provided by either of the parties interested, then the finding of such board of arbitration shall be binding and final; *Provided*, The sum of money agreed upon by the board of arbitration has been tendered or paid, or a deed for such right of way executed and delivered or tendered by the party or parties over whose land the right of way is sought. (S. L. 1882, ch. 57, sec. 4.)

CHAPTER 2.

Destroying water improvements—Penalty.

SEC. 1347. Any person or persons who shall knowingly and wilfully cut, dig, or break down, or open any gate, bank, embankment, or side of any ditch, canal or reservoir, flume, tunnel, or feeder in which such person or persons may be joint owners, or on the property of another, or in the lawful possession of another or others, and used for the purpose of irrigation, milling, manufacturing, mining or domestic purposes, with intent maliciously to injure any person, association or corporation, or for his or her own gain, unlawfully, with the intention of stealing, taking, or causing to run, or pour out of such canal, or reservoir feeder, or flume, any water for his or her own profit, benefit, or advantage, to the injury of any other person, persons, association, or corporation lawfully in the use of such water, or of such ditch, canal, tunnel, feeder or flume, he, she, it, or they, so offending, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be fined in any sum not exceeding one hundred dollars, and may be imprisoned in the county jail, not exceeding six months, or both, at the discretion of the court. (S. L. 1886, ch. 61, sec. 17.)

Liability of owners of reservoirs.

SEC. 1356. The owners of reservoirs shall be liable for all damage arising from leakage or overflow of the waters therefrom, or by floods caused by breaking of the embankments of such reservoir. (S. L. 1886, ch. 61, sec. 26.)

Fees of witnesses.

SEC. 1357. Every witness who shall attend before the court, or the judge thereof in vacation, or before the person appointed to take testimony, in the causes provided for in this chapter, under subpoena, by request of any party, shall be entitled to the same fees and mileage as witnesses in civil cases in the district court, and shall be paid by the party requiring his testimony. (S. L. 1886, ch. 61, sec. 27.)

Water commissioners to prevent waste of water.

SEC. 1359. Said water commissioners shall so divide, regulate and control the use of the water of all streams within their respective districts in such manner, as near as may be, as will prevent unnecessary waste of water, and to that end such commissioners shall so shut and fasten the head-gate or gates of all ditches so that no more water will flow into said ditch than is actually required and will be used for the uses or purposes for which such water was appropriated, and any person who may be injured by the action of any water commissioner or by his failure to act pursuant to this chapter, may resort to any court of competent jurisdiction for such relief as he may be entitled to. (S. L. 1886, ch. 61, sec. 29.)

Ditch owners to protect fish.

SEC. 1360. It shall be the duty of every person, corporation or company, who shall construct, maintain or operate any ditch or canal under the provisions of this chapter to construct and maintain, at the point and place where the water is diverted from its natural channel, some fit and proper obstruction whereby all fish will be prevented from entering said ditch or canal. Any person, company or corporation violating the provisions of this section shall be adjudged guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not more than one hundred dollars or by imprisonment in the county jail not less than ten nor more than sixty days, or by both such fine and imprisonment. (S. L. 1886, ch. 61, sec. 30.)

Vested rights preserved.

SEC. 1361. This chapter shall in no wise be construed as impairing or abridging any rights already vested in any person or persons, company or corporation by virtue of the law heretofore in force. (S. L. 1886, ch. 61, sec. 31.)

SESSION LAWS OF WYOMING, 1888.

SEC'S 14 AND 15, CHAPTER 55.

Limitation on appropriation of water—Disposition of surplus water—Royalties forbidden.

SEC. 14. The priority of right to the use of such water shall be limited and restricted to so much thereof as may be necessarily used and appropriated for irrigation or other beneficial purposes as aforesaid, irrespective of the carrying capacity of the ditch, and all the balance of the water not so appropriated shall be allowed to run in the natural stream from which such ditch draws its supply of water, and shall not be considered as having been appropriated thereby; and in case the owner or owners of any such ditch, canal or reservoir shall fail to use the water therefrom for irrigation or other beneficial purposes, or shall refuse to furnish any surplus water to the owner or owners of land lying under such ditch as hereinafter provided, during any two successive years, they shall be considered as having abandoned the same, and shall forfeit all water rights, easements and privileges appurtenant thereto, and the waters formerly appropriated by them may be again appropriated for irrigation and other beneficial purposes, the same as if such ditch, canal or reservoir had never been constructed; neither shall the owner or owners of any such ditch, canal or reservoir have any right to receive from others any royalty for the use of the water carried thereby, but every such owner or owners having a surplus supply of water and furnishing the same to others from any ditch, canal or reservoir as hereinafter provided shall be considered common carriers and shall be subject to the same laws that govern common carriers.

Surplus water shall be sold—County commissioners shall fix rates.

SEC. 15. The owner or owners of any such ditch which carries a greater quantity of water than the owner or owners thereof necessarily use for irrigation and other beneficial purposes, in connection with their own lands, shall, when application is made to them for that purpose, furnish such surplus water at reasonable rates to the owners of lands lying under any such ditch for the purpose of reclaiming such lands and rendering the same productive, and in case of refusal so to do, the owner or owners of any such ditch may be compelled by injunction suit to furnish such water on such terms as to the court may seem meet and proper; *provided*, that the board of county commissioners in their respective counties shall have power, when application is made to them by either party interested, to establish reasonable maximum rates to be charged for the use of water, whether furnished by individuals or corporations.

SESSION LAWS OF WYOMING, 1893.

CHAPTER 23.

IRRIGATION COMPANIES—ASSESSMENT OF CAPITAL STOCK.

SECTION 1. That any ditch or irrigation company or association, all the property or capital stock of which is owned by farmers or others, owning lands under the line of such company's or association's ditch, and receiving water therefrom, by reason of their being owners or stockholders in said company or association, shall have the right to levy and collect such annual assessments on the capital stock of said company, or members or owners of such association, whether said capital stock be fully paid up or otherwise, as may be deemed necessary by the trustees of said company, or a majority of the stock of such association, for the purpose of maintaining its ditches, flumes, tunnels and the payment of all necessary expenses of such company; *provided*, that this section shall only apply to such water companies or associations whose capital stock or ditch property is wholly owned by persons or corporations owning land under the line of their ditches and using water therefrom by reason of being such stockholders in such companies; *and provided further*, that said company or association shall have the right to close the head-gate and refuse water to all such stockholders, owners or members who fail or refuse to pay said assessments after ten days' notice thereof in writing, made by the president, agent or attorney of said company or association.

SEC. 2. This Act shall take effect and be in force from and after its passage.

SESSION LAWS OF WYOMING, 1890-91.

CHAPTER 8.

SUPERVISION OF WATER.

Water divisions defined.

SECTION 1. The state of Wyoming is hereby divided into four water divisions, denominated water division number one, water division number two, water division number three, water division number four, respectively.

*SEC. 2. Water Division No. 1 shall consist of all lands within this State drained by the North Platte river and the tributaries of the North Platte river and the South Platte river, Snake river (a tributary of Green river) and its tributaries, and Running Water creek and its tributaries.

*SEC. 3. Water Division No. 2 shall consist of all lands within this State drained by the tributaries of the Yellowstone and Missouri rivers north of the water shed of the North Platte and Running Water creek, and east of the summit of the Big Horn Mountains.

*SEC. 4. Water Division No. 3 shall consist of all lands within this State drained by the Big Horn river and its tributaries, and by Clark's Fork and its tributaries.

SEC. 5. Water Division No. 4 shall consist of all lands within this State drained by the Green, Bear and Snake rivers, and the tributaries thereof; except Snake river, (a tributary of Green river), and its tributaries.

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*As amended, 1895.

Salary of engineer.

Sec. 6. The state engineer shall receive a salary of two thousand five hundred dollars per annum, payable in monthly installments, by the state treasurer, upon warrants drawn by the state auditor.

His office.

Sec. 7. The state engineer shall keep his office at the state capital in the capitol building.

His oath and bond.

Sec. 8. Before entering upon the duties of his office, he shall take and subscribe an oath before some officer authorized by the laws of the state to administer oaths, to faithfully perform the duties of his office, and shall file with the secretary of state said oath, and his official bond, in the penal sum of five thousand dollars, with not less than two sureties, to be approved by the governor of the state, and conditioned for the faithful discharge of the duties of his office, and for delivery to his successor, or other officer appointed by the governor to receive the same, all moneys, books and other property belonging to the state, then in his hands or under his control, or with which he may be legally chargeable as such officer. No person shall be appointed as such state engineer who is not known to have such theoretical knowledge and practical skill and experience as shall fit him for the position.

Duties of engineer.

Sec. 9. The state engineer shall perform such duties as are prescribed in the law defining the duties of the board of control, and in addition, shall make, or cause to be made, measurements and calculations of the discharge of streams, from which water shall be taken for beneficial purposes, commencing such work upon those streams as are most used for irrigation or other beneficial purposes. He shall collect facts, and make surveys to determine the most suitable location for constructing works for utilizing the water of the state, and to ascertain the location of the lands best suited for irrigation. He shall examine reservoir sites and shall, in his reports, embody all the facts ascertained by such surveys and examinations, including, wherever practicable, estimates of the cost of proposed irrigation works, and of the improvement of reservoir sites. He shall become conversant with the waterways of the state, and the needs of the state as to irrigation matters, and in his reports to the governor he shall make such suggestions as to the amendment of existing laws, or the enactment of new laws as his information and experience shall suggest, and he shall keep in his office full and proper records of his work, observations and calculations. All of which shall be the property of the state.

Assistant engineer.

SEC. 10. The state engineer shall have the power to employ an assistant engineer, at an expense not to exceed twelve hundred dollars ($1,200) per year, and to employ other assistants at a total additional expense not to exceed five hundred dollars ($500) per year; such assistant engineer, and such additional assistants, to be paid out of any money appropriated for that purpose, on certificates of the state engineer, showing the amount of such employment, and the compensation therefor, and on the presentation of such certificate to the state auditor, he shall issue a warrant on the state treasurer for the amount thereof.

Traveling expenses allowed.

SEC. 11. When the state engineer, or his assistant engineer, is called away from his office he shall be entitled to his actual traveling expenses, which shall be paid out of any money appropriated for that purpose, on the certificate of said state engineer; such certificate shall be presented to the state auditor, who shall thereupon draw upon the state treasurer for the amount thereof.

Report of engineer.

SEC. 12. The state engineer shall prepare and render to the governor, biennially, and oftener if required, full and true reports of his work, touching all the matters and duties devolving upon him by virtue of his office, which report shall be delivered to the governor on or before the thirtieth day of November, of the year preceding the regular session of the legislature.

DIVISION SUPERINTENDENTS.

Appointment and term.

SEC. 13. There shall be one superintendent for each of the water divisions by this act created, who shall be appointed by the governor, with the consent of the senate, who shall hold his office for four years, or until his successor is appointed and shall have qualified, and who shall reside in the water district [division] for which he is appointed. The superintendent of each water division shall have immediate direction and control of the acts of the water commissioners, and of the distribution of water in his water division, and shall perform such duties as shall devolve upon him as a member of the board of control.

Duties.

SEC. 14. Said division superintendent shall have general control over the water commissioners of the several districts within his division. He shall, under the general supervision of the state engineer, execute the laws relative to the distribution of water, in accordance with the rights of priority of appropriation and perform such other functions as may be assigned to him by the state engineer.

May make regulations.

SEC. 15. Said division superintendent shall, in the distribution of water, be governed by this act, and acts now in force, but, for the better discharge of his duties, he shall have authority to make such other regulations to secure the equal and fair distribution of water, in accordance with the rights of priority of appropriation, as may, in his judgment, be needed in his division;

Provided, Such regulations shall not be in violation of any part of this act, or other laws of the state, but shall be merely supplementary to, and necessary to enforce the provisions of the general laws and amendments thereto.

Appeal from.

Sec. 16. Any person, ditch company or ditch owner, who may deem himself injured, or discriminated against by any such order, or regulations of such division superintendent, shall have the right to appeal from the same to the state engineer, by filing with the state engineer a copy of the order or regulation complained of, and a statement of the manner in which the same injuriously affects the petitioner's interest. The state engineer shall, after due notice, hear whatever testimony may be brought forward by the petitioner, either orally or by affidavit, and, through the division superintendent, shall have power to suspend, amend or confirm the order complained of.

Water commissioners to report to superintendent—Reports filed—Order of Superintendent.

Sec. 17. All water commissioners shall make reports to the division superintendent of their division, as often as may be deemed necessary by said superintendent. Said reports shall contain the following information: The amount of water necessary to supply all the ditches, canals and reservoirs of that district; the amount of water actually coming into the district to supply such ditches, canals and reservoirs; whether such supply is on the increase or decrease; what ditches, canals and reservoirs are at that time without their proper supply; and the probability as to what the supply will be during the period before the next report will be required; and such other further information as the division superintendent of that division may suggest. Said division superintendent shall carefully file and preserve such reports, and shall from them ascertain what ditches, canals and reservoirs are, and what are not, receiving their proper supply of water; and if it shall appear that in any division of that district, [district of that division,] any ditch, canal, or reservoir is receiving water, whose priority post-dates that of the ditch, canal or reservoir in another district, as ascertained from his register, he shall at once order such post-dated ditch, canal or reservoir shut down, and the water given to the elder ditch, canal or reservoir. His orders being directed at all times to the enforcement of priority of appropriation, according to his tabulated statement of priorities, to the whole division, and without regard to the district within which the ditches, canals or reservoirs may be located. The reports of water commissioners to the division superintendents of irrigation shall be filed and kept in the office of state engineer.

Pay of superintendent—His oath and bond.

SEC. 18. Said division superintendent shall be paid ten dollars ($10) per day, for every day actually consumed in the performance of his duties as such division superintendent, and shall, in addition, be paid his actual traveling expenses when called away from home to the performance of his duties. Before entering upon the duties of his office, such division superintendent shall take and subscribe an oath, before some officer authorized by the laws of the state to administer oaths, to faithfully perform the duties of his office, and file with the secretary of state said oath, and his official bond in the penal sum of two thousand five hundred dollars, with not less than two sureties, to be approved by the governor of the state, and conditioned for the faithful discharge of the duties of his office.

DUTIES OF BOARD OF CONTROL.

How constituted—Meetings and officers.

*SEC. 19. There is hereby constituted a board of control composed of the state engineer and the superintendents of the four water divisions. Said board shall have an office with the state engineer in the capitol, at Cheyenne, and shall hold two meetings each year for the transaction of such business as may come before it. The first of said meetings to begin on the second Wednesday in March, and the second on the third Wednesday in October. The state engineer shall be *ex officio* president of said board and shall have the right to vote on all questions coming before it, and a majority of all the members of said board shall constitute a quorum to transact business. The said board shall elect one of its members secretary, and it shall be his duty to keep a full, true and complete record of the transactions of said board, and to certify under seal all certificates of appropriation of water made in accordance with the provisions of this act.

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*As amended, 1895.

Duty at first meeting—Measurement of streams—Taking testimony—Notice to claimants—Statement of claimant.

SEC. 20. It shall be the duty of said board at its first meeting to make proper arrangements for beginning the determination of the priorities of right to the use of the public waters of the state, which determination shall begin on the streams most used for irrigation, and be continued as rapidly as practicable, until all the claims for appropriation now on record shall have been adjudicated. The method of determining the priority and amounts of appropriation shall be as follows:

The board of control shall decide at their first meeting the streams to be first adjudicated, and shall fix a time for beginning the taking of testimony, and the making of such examination as will enable them to determine the rights of the various claimants. Said board shall prepare a notice, setting forth the date when the engineer will begin a measurement of the stream, and the ditches diverting the water therefrom, and a place, and a day certain, when the superintendent of the water division in which the stream to be adjudicated is situated, shall begin the taking of testimony as to the rights of the parties claiming water therefrom. Said notice shall be published in two issues of a newspaper having general circulation in the county in which such stream is situated, the publication of said notice to be at least thirty days prior to the beginning of taking testimony by said division superintendent. or for the measurement of the stream by the state engineer, or his assistant, and the superintendent taking such testimony shall have the power to adjourn the taking of evidence from time to time, and from place to place: *Provided*, All places appointed and adjourned to by the superintendent shall be so situated, as related to the streams, as shall best suit the proper convenience of the persons interested in the determination of such priorities and appropriations. It shall also be the duty of said division superintendent to mail to each party having a recorded claim to the waters of such stream, by registered mail, a similar notice, setting forth the date when the state engineer, or his assistant, will begin the examination of the stream and ditches diverting water therefrom, and also the date when the superintendent will begin the taking of testimony, and the date when the taking of such testimony by said division superintendent shall close, and he shall, in addition, enclose with said notice a blank form on which said claimant shall present in writing all the particulars showing the amounts and dates of appropriations to the use of water of said stream to which he lays claim; the said statement to include the following:

The name and post-office address of the claimant.

The nature of the use on which the claim for an appropriation is based.

The time of the commencement of such use; and if distributing works are required:

The date of beginning of survey.

The date of beginning of construction.

The date when completed.

The date of beginning and completion of enlargements.

The dimensions of the ditch as originally constructed and as enlarged.

The date when water was first used for irrigation or other beneficial purposes, and if used for irrigation, the amount of land reclaimed the first year; the amount in subsequent years, with the dates of reclamation, and the amount of land such ditch is capable of irrigating; the character of the soil and the kind of crops cultivated, and such other facts as will show a compliance with the law in acquiring the appropriation and the rank of priority claimed.

Statements to be under oath.

SEC. 21. Each of said claimants shall be required to certify to his statements under oath, and the superintendent of the water division in which the testimony is taken, is hereby authorized to administer such oath, which shall be done without charge to the claimant, as also shall be the furnishing of blank forms for said statement.

Superintendent takes testimony, when · Notice upon completion of testimony.

SEC. 22. Upon the date named in the preceding notice, the division superintendent shall begin the taking of said testimony, and shall continue until said testimony shall be completed; *Provided*, That in case the division superintendent of any water district [division] is directly, or indirectly, interested in the water of any stream of his division, the taking of evidence in so far as relates to said stream, shall be under the direction of the division superintendent of the next nearest water division, or under the direct personal supervision of the state engineer, as may be deemed most expedient. Upon the completion of the taking of evidence by the division superintendent, it shall be his duty to at once give notice, in one issue of some newspaper of general circulation in the county where such determination is, and by registered mail, to the various claimants, that upon a certain day and at a place named in the notice, all of said evidence shall be open to the inspection of the various claimants, and said superintendent shall keep said evidence open to inspection at said place, not less than one day and not more than five days.

Contests.

*SEC. 23. Should any person, corporation or association of persons owning any irrigation works claim[ing] any interest in the stream or streams involved in the adjudication desire to contest any of the rights of the persons, corporations or associations who have submitted their evidence to the superintendent, as aforesaid, such persons, corporations or associations shall within fifteen days after the testimony so taken shall have been opened to public inspection as provided in Sec. 22 of said Act, in writing, notify the superintendent of the water division in which is located said irrigation works or stream or streams, stating with reasonable certainty the ground of their proposed contest, which statement shall be verified by the affidavit of the contestant, his agent or attorney, and the said division superintendent shall notify the said contestant and the person, corporation or association whose rights are contested, to appear before him at such convenient place as the superintendent shall designate in such notice. Said superintendent shall also fix the time both as to the day and hour for the hearing of said contest, which date shall not be less than thirty, nor more than sixty days from the date the notice is served on the party, association or corporation, which notice and the return thereof shall be made in the same manner as summons are served in civil actions in the district court of this state.

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*As amended, 1895.

Superintendents of water divisions shall have power to adjourn hearings from time to time upon reasonable notice to all the parties interested, and to issue subpœnas and compel the attendance of witnesses to testify upon such hearings, which shall be served in the same manner as subpœnas issued out of the district courts of the state; and shall have the power to compel such witnesses so subpœnaed to testify and give evidence in said matter; said witnesses shall receive fees as in civil cases, to be paid by the party or parties against whom the contest shall be finally determined.

The evidence on such proceeding shall be confined to the subjects enumerated in the notice of contest.

The superintendent shall require a deposit of $8 from each party for each day he shall be so engaged in taking evidence on said contest.

Upon the final determination of the adjudication of the matters by the board of control, an order shall be entered directing that the money so deposited shall be refunded to the persons, associations or corporations in whose favor such contest shall be determined and that all moneys deposited by other parties therein shall be turned over by the superintendent to the state treasury to the credit of the fund provided for the maintenance of the board of control.

Upon the completion of the evidence in the original hearing before the superintendent, as provided in the previous section, and the evidence taken in all contests, it shall be his duty to transmit all the evidence and testimony in said adjudication to the office of the board of control, in person or by registered mail.

Measurement of stream and ditches.

SEC. 24. It shall be the duty of the state engineer, or some qualified assistant, to proceed at the time specified in the notice to the parties on said stream to be adjudicated, to make an examination of said stream, and the works diverting water therefrom, said examination to include the measurement of the discharge of said stream, and of the carrying capacity of the various ditches and canals diverting water therefrom: an examination of the irrigated lands, and an approximate measurement of the lands irrigated, or susceptible of irrigation from the various ditches and canals, which said observations and measurements shall be reduced to writing, and made a matter of record in his office, and it shall be the duty of the state engineer to make, or cause to be made, a map or plat, on a scale of not less than one inch to the mile, showing, with substantial accuracy, the course of said stream, the location of each ditch or canal diverting water therefrom, and the legal sub-divisions of land which have been irrigated, or which are susceptible of irrigation from the ditches and canals already constructed.

Order determining priorities.

SEC. 25. At the first regular meeting of the board of control, after the completion of such measurement by the state engineer, and the return of said evidence by said division superintendent, it shall be the duty of the board of control to make, and cause to be entered of record in its office, an order determining and establishing the several priorities of right to the use of waters of said stream, and the amounts of appropriations of the several persons claiming water from such stream, and the character and kind of use for which said appropriation shall be found to have been made. Each appropriation shall be determined in its priority and amount, by the time by which it shall have been made, and the amount of water which shall have been applied for beneficial purposes. *Provided*, That such appropriator shall at no time be entitled to the use of more water than he can make a beneficial application of on the lands for the benefit of which the appropriation may have been secured, and the amount of any appropriation made by reason of an enlargement of distributing works, shall be determined in like manner. *Provided*, That no allotment shall exceed one cubic foot per second for each seventy acres of land for which said appropriation shall be made.

Certificate of appropriation.

*SEC. 26. Within a reasonable time after the determination of the priorities of appropriation of the use of waters of any stream, it shall be the duty of the secretary to issue to each person, association or corporation represented in such determination, a certificate, to be signed by the state engineer, as president of the board of control, and attested under seal by the secretary of said board, setting forth the name and post-office address of the appropriator; the priority number of such appropriation; the amount of water appropriated; and if such appropriation be for irrigation, a description of the legal sub-divisions of land to which said water is to be applied. Such certificate shall be transmitted by said state engineer, or by a member of the board of control in person or by registered mail to the county clerk of the county in which such appropriation shall have been made, and it shall be the duty of said county clerk on receipt of the same to notify said party or parties in whose favor the said certificate is issued, that on payment of the fee for recording, which fee shall be seventy-five cents, he will record the same; and on receipt of said fee he shall so record the same in a book especially prepared and kept for that purpose.

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*As amended, 1895

Appeal from board allowed.

SEC. 27. Any party, or number of parties acting jointly, who may feel themselves aggrieved by the determination of the board of control, may have an appeal from the board of control to the district court of the judicial district within which the appropriation or appropriations of the party or parties so aggrieved may be situated. All persons joining in the appeal shall be joined as appellants, and all persons having interests adverse to the parties appealing, or either of them, shall be joined appellees.

Proceeding on appeal.

SEC. 28. The party or parties appealing shall, within sixty days of the determination of the board of control, which is appealed from, and the entry thereof in the records of the board, file in the district court to which the appeal is taken, a notice in writing, stating that such party or parties, appeals to such district court from the determination and order of the board of control; and upon the filing of such notice, the appeal shall be deemed to have been taken. *Provided, however*, That the party or parties appealing shall, within the sixty days mentioned, enter into an undertaking, to be approved by the district court, or judge thereof, and to be given to all the parties in the said suit or proceeding, other than the parties appealing, and to be in such an amount as the court, or judge thereof, shall fix, conditioned that the parties giving their said undertaking shall prosecute their appeal to effect, and without unnecessary delay, and will pay all costs and damages which the party to whom the undertaking is given, or either, or any of them, may sustain in consequence of such appeal.

Notice of appeal.

*Sec. 29. The clerk of the district court shall immediately upon filing of said notice of appeal and the approval of the bond mentioned in section 28, transmit to the secretary of the board of control a notice over the seal of the court to the effect that said appeal has been perfected, which notice shall be entered of record by the secretary in the records of the board of control, and the appellant or appellants [shall] cause a certified copy thereof to be served on each of the appellees; serving the same in the manner provided for the serving of a summons in the district court.

Transcript and petition to be filed.

*Sec. 30. The appellant or appellants shall within six months after the appeal, as provided for in sections 27, 28 and 29, is perfected, file in the office of the clerk of the district court a certified transcript of the order of determination made by the board of control, and which is appealed from, a certified copy of all the records of the board of control relating to such determination, and a certified copy of all the evidence offered before the board of control including the measurements of streams, tributaries and ditches provided for by Section 24, together with the petition setting out the cause of complaint of the party or parties appealing, to which petition all parties joined as appellees shall be served with notice by the issuance of summons out of the office of the clerk of such district court within the time and manner provided by law for the issuance and service of summons in actions of law; and all proceedings of appeal shall be conducted according to the provisions of the civil code of procedure, and the practice of appeals from the district courts of the state to the supreme court; *Provided*, That all hearings in the district

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As amended, 1895.

court on appeal be had upon the evidence theretofore taken, and certified from the office of the board of control, and no new evidence shall be permitted, unless it shall appear by proper and satisfactory showing that new evidence has been discovered which could not with reasonable diligence have been discovered prior to the final hearing before the board.

It shall be the duty of the clerk of the district court immediately upon the entry of any judgment, order or decree by the district court, or by the judge thereof, in an appeal from the decision of the board of control to transmit a certified copy of said judgment, order or decree to the secretary of the state board of control. It shall be the duty of the secretary to immediately enter the same upon the records of such office and the state engineer shall forthwith issue to the superintendent or superintendents of water divisions instructions in compliance with the said judgment, order or decree, and in execution thereof. All costs made and accruing by reason of such appeal shall be adjudged to be paid by the party or parties against whom such appeal shall be finally determined.

During the time an appeal from order of the board of control is pending in the district court, and until a certified copy of the judgment, order or decree of the district court is transmitted to the state engineer, the division of water from the stream involved in such appeal shall be made in accordance with the order of the board of control.

Provided, That at any time after the appeal has been perfected the appellant or appellants may stay the operations of said decree appealed from by filing a bond in the district court, wherein such appeal is pending, in such amount as the Judge thereof may designate, conditioned that he will pay all damages that may accrue to the appellee or appellees by reason of such order or decree not being enforced, should the proceedings and appeal be decided against the appellant. And immediately upon the filing and approval of such bond to stay the operations of the decree, the clerk of the district court shall transmit to the board of control a notice over the seal of the court to the effect that such bond has been filed, and that the operations of such decree are stayed during the pending of such appeal proceedings. This notice shall be recorded in the records of the board of control, and the state engineer shall immediately give proper notice to the superintendent of the water division wherein such appeal may have been taken.

Transfer of county records to engineer.

SEC. 31. Within thirty days from the passage of this act, it shall be the duty of the county clerk, in each of the counties of this state, to prepare a full and complete transcript of all the claims to appropriations of water now on file in their respective offices, and to transmit the same without delay to the state engineer, by express or registered mail, for which service he shall be paid by the county the sum of four dollars ($4.00) per day, for each and every day required to prepare said transcript; *Provided*, That the county clerk shall, in place of such abstract, transmit such original records of claims to water as are recorded in books kept specially for that purpose. It shall also be the duty of the clerk of the district court, within thirty days from the date of the passage of this act, to transmit to the state engineer, in like manner, the certificates of measurements of ditches made by county surveyors, now on file in the offices of said clerks of the district courts, in the various counties of the state.

Engineer to file and classify.

SEC. 32. Immediately on receipt of said transcripts, and said original records, it shall be the duty of the state engineer to file them in his office, and to classify and arrange said claims, by placing all the claims to water of one stream and its tributaries together.

Who to be notified.

SEC. 33. In issuing notices to claimants, in priority adjudications of the waters of any stream and its tributaries, as provided in section 20 of this act, all parties named as claiming the waters of said stream or tributaries in said transcript, shall be notified by mail as specified in said section.

Application for right to appropriate water.

*Sec. 34. Any person, association or corporation, hereafter intending to acquire the right to the beneficial use of the public water of the state of Wyoming, shall, before commencing the construction, enlargement, or extension of any ditch, canal or other distributing works, or performing any work in connection with said construction, or proposed appropriation, make an application to the state engineer for a permit to make such appropriation. Such application must set forth the name and postoffice address of the applicant; the source of the water supply; the nature of the proposed use; the location and descriptions of the proposed ditch, canal or other work; the time within which it is proposed to begin construction; the time required for the completion of construction; and the time required for the complete application of the water to the proposed use.

In case the proposed right of use is for agricultural purposes, the application shall give the legal sub-divisions of land proposed to be irrigated, with the total acreage to be reclaimed, as near as may be. On receipt of this application, which shall be of a form prescribed by the state engineer, it shall be the duty of that officer to make an endorsement thereon of the date of its receipt, and to make a record of such receipt in some suitable book in his office. It shall be his duty to examine said application and ascertain if it sets forth all the facts necessary to show the location, nature and amount of the proposed use. If upon such examination the application is found detective, it shall be the duty of the state engineer to return the same for correction; the date of such return, with the reasons therefor, shall be endorsed on the application and a record made thereof in the book kept for recording receipts of such applications. A like record shall be kept of the date of the return of corrected applications and of the date of the refusal and return of applications rejected.

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*As amended, 1895.

All applications which shall comply with the provisions of this act and with the regulations of the engineer's office, shall be recorded in a suitable book kept for that purpose; and it shall be the duty of the state engineer to approve all applications made in proper form, which contemplate the application of the water to a beneficial use and where the proposed use does not tend to impair the value of existing rights, or be otherwise detrimental to the public welfare. But where there is no unappropriated water in the proposed source of supply, or where the proposed use conflicts with existing rights, or threatens to prove detrimental to the public interest, it shall be the duty of the state engineer to reject such application and refuse to issue the permit asked for.

The refusal or approval of an application shall be endorsed thereon and a record made of such endorsement in the state engineer's office. The application so endorsed shall be returned to the applicant. If approved, the applicant shall be authorized, on receipt thereof, to proceed with the construction of the necessary works and to take all steps required to apply the water to a beneficial use and to perfect the proposed appropriation. If the application is refused, the applicant shall take no steps towards the prosecution of the proposed work, or the diversion and use of the public water, so long as such refusal shall continue in force.

Before either approving or rejecting an application, the state engineer may require such additional information as will enable him to properly guard the public interests, and may, in the case of applications proposing to divert more than twenty-five cubic feet of water per second of time, or to reclaim over one thousand acres of land, require a statement of the following facts:

In case of incorporated companies, he may require the submission of the articles of incorporation, the names and places of residence of its directors and officers, the amount of its authorized and of its paid-up capital.

If the applicant is not an incorporated company, he may require a showing as to the name or names of the party or parties proposing to construct the work, and a showing of facts necessary to enable him to determine whether or not they have the financial ability to carry out the proposed work, and whether or not the said application has been made in good faith.

In his endorsement of approval on any application, the state engineer shall require that actual construction work shall begin within one year from the date of such approval, and that the construction of any proposed irrigation work shall be completed within a period of five years from the date of such approval. He may limit the application to a less period of time for the completion of work than is asked for, and likewise the perfecting of the proposed right for a less period than named in the application. That the state engineer shall have authority, for good cause shown, to extend the time within which irrigation or other works shall be completed, and under any permit therefor issued by said engineer.

Any applicant feeling himself aggrieved by the endorsement made by the state engineer upon his application, may, in writing, in an informal manner, and without pleadings of any character, appeal to the board of control for an examination and reversal of the endorsement of the state engineer; and if he shall deem himself aggrieved by the order made by the board of control, with reference to his application, he may take an appeal therefrom to the district court of the county in which the point of diversion of the proposed appropriation shall be situated. Such appeal shall be taken within sixty (60) days from the issuance of the order by the board of control, and shall be perfected when the applicant shall have filed in the office of the clerk of such district court a copy of the order appealed from, certified by the secretary of the board of control as a true copy, together with the petition to such court setting forth the appellant's reason for appeal. Such appeal shall be heard and determined upon such competent proof as shall be adduced by applicant, and such like proofs as shall be adduced by the board of control, or some person duly authorized in its behalf.

Map to be filed.

*Sec. 35. Each application for permit to appropriate water for beneficial uses must be accompanied by a map or plat in duplicate showing accurately the location and extent of the proposed work.

These maps or plats must be drawn on tracing linen, on a scale not less than two inches to the mile; they must show the location of the head-gate or point of diversion by courses and distances from some government corner; they must show the actual location of the ditch or canal, or water-line of the reservoir, and must show, wherever section lines are crossed, the distance to the nearest government corner. The map or plat must show the course of the river, stream or other source of supply, the location and area of all land proposed to be reclaimed, the position and area of all reservoirs, or basins intended to be created for the purpose of storing water; the location of the intersection with all other canals, ditches, laterals or reservoirs which are crossed by this work or with which connections are made; but all streams, and all intersecting ditches, canals and reservoirs not connected with the proposed work must be represented in ink of a different color from that used to represent the proposed work. These maps must contain the name of the proposed work, and, where possible, the number of the permit. They must, in addition, have the name or names of the applicant or applicants, and a certificate of the surveyor giving the date of survey, his name and post-office address.

It shall be the duty of the State Engineer to examine these maps or plats and to ascertain if they agree with the description contained in the application, and when found to agree, or made to agree, to approve the same, file one copy in his office and return the other, approved, to the party filing them.

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*As amended, 1895.

In case of ditches or canals carrying more than fifty (50) cubic feet of water per second the Engineer may require, in addition to the maps or plats above described, the following:

A longitudinal profile of the ditch showing the bottom and proposed water line: the horizontal scale of this line shall not be less than one inch to one thousand feet, and the vertical scale not less than one inch to twenty feet.

A plan showing cross sections at a sufficient number of points to show all the different forms which the ditch when completed will take, and showing what portion of the water is to be conveyed in excavation, and what portion to be conveyed in fill. These plans shall be drawn on a horizontal and vertical scale of one inch to twenty feet.

Plans of any dams, cribs, embankments or other proposed works to obstruct any river, stream, lake or pond or other source of water supply, shall be drawn on a longitudinal scale of not less than one inch to two hundred feet, and for cross sections on a scale of not less than one inch to twenty feet; and shall show what material is intended to be used and placed in such work. Timber, brush, stone or other material except earth used in such works shall be shown in detail on a plan, the scale of which shall not be less than one inch to four feet. The maps of all proposed reservoirs shall show the surface of the ground under water and a sufficient number of lines of level shall be shown so that the contents of the reservoir or basin may be accurately determined. If the levels shall be shown by contour lines they shall be on a scale sufficiently large to show vertical levels not exceeding five feet, and with all such reservoir plans there shall be furnished a plan, on a scale of not less than one inch to four feet, showing the method of providing a wasteway for such reservoir and the method of drawing off the water from such reservoir or basin.

Certificate to appropriator.

SEC. 36. Upon it being made to appear to the satisfaction of the board of control, that any appropriation made in pursuance of the application of this act provided for, has been perfected in accordance with such application, and the endorsement thereon by the state engineer, it shall be the duty of the board of control, by the hand of its president, attested under the seal of the secretary, to send to the county clerk, certificate of the same character as that described in section twenty-six of this act, which said certificate shall be recorded in the office of the county clerk as provided in section twenty-six of this act.

Date of priority.

SEC. 37. The priority of such appropriation shall date from the filing of the application in the engineer's office.

Legal standard.

SEC. 38. A cubic foot of water per second of time shall be the legal standard for the measurement of water in this state, both for the purpose of determining the flow of water in natural streams, and for the purpose of distributing water therefrom.

County to pay expense of printing.

SEC. 39. All bills for the printing of notices to claimants of water in the adjudications provided for in this act, shall be paid for by the county in which the stream, the appropriation of whose waters shall have been so adjudicated, shall be situated, the said bills to be approved by the superintendent of the water division in which the adjudication is made.

WATER COMMISSIONERS.

Districts.

SEC. 40. The board of control shall divide the state into water districts, said water districts to be so constituted as to secure the best protection to the claimants for water, and the most economical supervision on the part of the state; said water districts shall not be created until a necessity therefor shall arise, but shall be created from time to time as the appropriations and priorities thereof, from the streams of the state, shall be adjudicated.

Commissioner, how appointed.

SEC. 41. For each water district created under this act, there shall be appointed one commissioner, who shall be a resident of the district in which he is to serve, and who shall be appointed by the governor, to be selected by him from persons recommended to him by the superintendent of the water division in which such water district is situated. Each commissioner shall hold his office two years and until his successor is appointed and has qualified, and the governor shall by like selection and appointment fill all vacancies which may occur in the office of water commissioner, and may at any time remove any water commissioner for failure to perform his duties as such water commissioner, upon complaint in that respect being made to him in writing.

Duties—Penalty for interference—Power to arrest.

SEC. 42. It shall be the duty of said water commissioner to divide the water in the natural stream or streams of his district among the several ditches taking water therefrom, according to the prior rights of each, respectively, in whole or in part, and to shut and fasten, or cause to be shut and fastened, under the direction of the superintendent of his water division, the headgates of ditches heading in any of the natural streams of the district, when, in times of scarcity of water, it is necessary so to do by reason of the priority of rights of others taking water from the same stream, or its tributaries. Every person who shall wilfully open, close, change or interfere with any headgate or water box without authority, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined a sum not exceeding one hundred dollars, or to be imprisoned in the county jail for a term not to exceed six months, or by both such fine and imprisonment. The water commissioners or their assistants, within their districts, shall have power to arrest any person or persons offending, and turn them over to the sheriff of the proper county, and immediately upon delivering any such person so arrested into the custody of the sheriff, it shall be the duty of the water commissioner making such arrest to immediately, in writing and upon oath, make complaint before the proper justice of the peace against the person so arrested.

Pay of.

SEC. 43. Water commissioners herein provided for shall each be entitled to pay at the rate of five dollars per day for each day he shall be actively employed in the duties of his offie, to be paid by the county in which the work is performed. Each water commissioner shall keep a just and true account of the time spent by him in the duties of his office, and the time spent by him in the performance of his duties in each county respectively, into which his water district may extend, and shall present a true copy thereof, verified by oath, to the board of county commissioners of the county in which the work may have been done. And the said board of county commissioners shall, upon approval thereof by the superintendent of the water division, allow the same.

Assistants.

SEC. 44. Said water commissioner shall have power, in case of emergency, to employ suitable assistants to aid him in the discharge of his duties. Such assistants shall take the same oaths as the water commissioner, and shall obey his instructions, and each shall be entitled to four dollars per day for every day he is employed, not to exceed thirty-five days in one year, to be paid upon certificates of the division superintendent, in the same manner as provided for the payment of the water commissioners.

When to begin work.

SEC. 45. Said water commissioners shall not begin their work until they have been called upon by two or more owners or managers of ditches, or persons controlling ditches in the several districts, by application in writing, stating that there is a necessity for the use of water; and they shall not continue performing services after the necessity therefor shall cease.

Head-gate—Measuring flume—When not constructed.

SEC. 46. The appropriator of any of the public waters of the state shall maintain, to the satisfaction of the division superintendent of the district in which such appropriation is made, a substantial head-gate at the point where the water is diverted, which shall be of such construction that it can be locked, and kept closed by the water commissioner; and such appropriator shall construct and maintain, when required by the division superintendent, a flume or measuring device, as near the head of such ditch as is practicable, for the purpose of assisting the water commissioner in determining the amount of water that may be diverted into said ditch from the stream. If any owner or appropriator of public waters that may have been adjudicated upon should neglect or refuse to put in such head-gate, or measuring device, after thirty days' notice to do so by the division superintendent, the said superintendent may notify the county commissioners of the county where such head-gate, flume or measuring device is [should be] situated, and it shall be the duty of said county commissioners, when so notified by said division superintendent, to put in such head-gate, flume or measuring device at the expense of the county where the expense is incurred, and present a bill of costs to the owner or owners of the ditch, and if such owner or owners, shall refuse or neglect, for three days after the presentation of such bill of costs, to pay the same, the said costs shall be made a charge upon the said ditch, and shall be collected as delinquent taxes, and be subject to the same conditions and penalties as other delinquent taxes, and until the full and complete payment of such bill of costs, it shall be the duty of the duty of the water commissioner of the district in which such ditch is situated, to close and keep closed the head-gate of such ditch, and to take such needful steps as will prevent any water from being diverted therein from the source of supply.

Pending cases, procedure in.

SEC. 47. All cases relating to the adjudication of priorities of rights to the use of water for beneficial purposes, in any of the water districts of this state, now pending in any of the district courts of the state, excepting such cases which may have been, by any such courts by order, referred to the board of control, may remain in said courts, and said courts shall proceed with the adjudication thereof in accordance with the laws in force at the time of the inception of such cases; *Provided*, That said court, or judge thereof in vacation, may, in its discretion, on the application of the parties interested, transfer any such case for adjudication to the board of control. All such cases which may have been, in the manner aforesaid, referred by any district court to the board of control, shall, together with all the testimony heretofore taken in said cases, and with all the papers and pleadings relative thereto, and a copy of all journal entries made in the case, at once, on the passage of this act, be transferred by the clerk of such district court, into the custody of the division superintendent of the division in which said adjudication may have been begun, and said division superintendent shall, as soon as possible, complete the taking of such testimony, and it shall be the duty of the board of control to first determine the rights of the parties on those streams where such determination has begun, and is unfinished at the time of the passage of this act.

Dam to be approved.

*SEC. 48. Duplicate plans for any dam across the channel of a running stream, above five feet in height, or of any other dam intended to retain water, above ten feet in height, shall be submitted to the state engineer for his approval, and it shall be unlawful to construct such dam until the said plans shall have been approved.

As amended, 1895.

The state engineer shall have authority to examine and inspect, during construction, any dam authorized under the provisions of this section, or any ditch, canal or other work carrying over fifty (50) cubic feet of water per second of time, and at the time of such inspection he may order the parties constructing such dam or other works to make any addition or alteration which he considers necessary for the security of the work or the safety of any person or persons residing on or owning land in the vicinity of such works.

Should any person or persons residing on or owning land in the neighborhood of any irrigation works after completion, or in course of completion, apply to the state engineer in writing, desiring an inspection of such works, the state engineer may order an inspection thereof. Before doing so he may require the applicant for such inspection to make a deposit of a sum of money sufficient to pay the expenses of an inspection, and in case the application appears to him not to have been justified he may cause the whole, or part, of such expense to be paid out of such deposit. In case the application appears to the state engineer to have been justified he may require the company to pay the whole, or any part, of the expenses of the inspection, and the same may be collected in the same manner as is provided for the collection of the expenses of constructing head-gates and measuring flumes.

Repealing clause.

Sec. 49. Sections one to thirteen inclusive, and sections sixteen to nineteen inclusive, of chapter fifty-five, Session Laws of eighteen hundred and eighty-eight, the whole of chapter eighty-two, Session Laws of eighteen hundred and ninety, and sections thirteen hundred and seventeen, thirteen hundred and twenty-two, of chapter one, title nineteen, Revised Statutes of the Territory of Wyoming; sections thirteen hundred and thirty-one to thirteen hundred and forty-six inclusive, sections thirteen hundred and forty-eight to thirteen hundred and fifty-five inclusive, and section thirteen hundred and fifty-eight of chapter two, title nineteen, Revised Statutes of the Territory of Wyoming, and section thirty-eight hundred and ninety-four, Revised Statutes of the Territory of Wyoming, and all laws or parts of laws, inconsistent with the provisions of this act, are hereby repealed.

Appeals to be advanced on docket.

SEC. 50. Upon any appeal being taken as is by this act provided, from the board of control to the district court of this state, it shall be the duty of said court to advance such appeal to the head of its trial docket, and to give such appeal precedence over all civil causes in hearing and determination thereof, and if an appeal be taken from the judgment or decree of the district court, in any appeal in this act provided for, to the supreme court of the state, it shall in like manner be the duty of the supreme court to advance such appeal to the head of its docket for the trial of civil causes, and give it like precedence as to trial.

SESSION LAWS OF WYOMING, 1895.

CHAPTER 45, SECS. 4, 5, 6 AND 7.

Fees to be charged by the State Engineer,

SEC. 4. The state engineer shall receive the following fees, which he shall collect in advance and pay into the state treasury, as by this act provided:

For filing and examining applications for permits to appropriate water, and maps of same, two dollars.

For recording any water right instrument, not specified above, one dollar for the first one hundred words, and for each subsequent folio fifteen cents.

For issuing certificates of appropriation, one dollar.

For making certified copies of any document recorded or filed in the engineer's office, per folio fifteen cents, and for each certificate attached thereto, one dollar.

Fees to be turned into Treasury.

SEC. 5. All moneys received by the state engineer in accordance with the provisions of section 4 of this act, shall be paid by him into the state treasury on the first Monday of January, April, July and October respectively. It shall be credited to the contingent fund of the state engineer's office and shall be available and is hereby appropriated for the payment of salaries for clerical assistance in said office.

Such salaries shall be paid by the state treasurer upon warrants drawn by the state auditor and approved by the state engineer.

SEC. 6. All laws or parts of laws inconsistent with the provisions of this act are hereby repealed.

SEC. 7. This act shall take effect and be in force from and after its passage.

CHAPTER 62, SECS. 9, 10, 11 AND 12.

Re-hearing before Board of Control.

SEC. 9. That after any final order of the board of control adjudicating the priorities upon any stream, any party interested therein may within one year thereafter apply for a re-hearing for reasons to be stated in the application, and upon the filing of such application the secretary of the board shall mail written notice thereof to every other party interested, and therein fixing and stating a time when such application will be heard. Upon such hearing the board shall have authority to modify or alter the original order in such respect as shall appear just and proper. But it shall not be necessary for an application for re-hearing to be filed to entitle any party to an appeal. Upon such hearing, the board shall also have authority to permit, upon good cause shown, the correction of the testimony of any party or witness if it shall appear that a mistake has occurred therein, but no other new evidence shall be received at such hearing unless it shall be shown to the satisfaction of the board that the same is material and has been discovered since the taking of the original testimony and could not with reasonable diligence have been discovered before that time.

Administering oaths.

Sec. 10. The members of the board of control shall be authorized to administer oaths in all cases where it shall be necessary in the performance of their official duties.

Fees of Board of Control.

Sec. 11. The secretary of the board shall collect the following fees, which shall be paid in advance and paid to the state treasurer and by him credited to the per diem fund of the board of control:

For making certified transcripts of the records of the board of control or of papers or documents filed with said board, one dollar for the first folio, and for each subsequent folio fifteen cents. For attaching certificate and seal of the board to each trsnscript, one dollar.

Sec. 12. This Act shall take effect and be in force from and after its passage.

APPENDIX.

TABLE NO. 1.

List of "Permits to Appropriate Water" Approved and Recorded in the

STATE ENGINEER'S OFFICE,

BETWEEN

Nov. 30th, 1892, and Nov. 15th, 1894.

PERMITS TO APPROPRIATE WATER.

Div. No.	Name of Applicant	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width. Top.	Width. Bot'm	Depth	Grade, feet per Mile.			Year	Month	Day
3	Mrs. Anne Grant	N. Fork of Popo Agie River	5	4	3	1	8	$ 650 00	160	1894	Sept.	1st
1	Wm. Sturgis, Jr.	Beaver Creek						6,000 00		1894	"	"
1	Anna S. Kimball	Antelope Creek	.5	5	3	1	1	300 00	40			
1	Edwin Carns	Willow Creek	.5	3	2.5	.66	8	100 00	120	1893	"	"
4	Peter Nelson	Black's Fork River	.31	5	3	3	1	60 00	157.63	1893	"	"
2	Geo. B. Simpson	Tongue River	1.12	4	2	1	10.56	100 00	120	1893	"	"
3	Geo. S. Thompson	Grey Bull River	3	8	4	1	7	400 00	1,080	1894	"	"
2	Edward Towns	Elk Horn Creek	6	4	3	1.5	12	900 00	1,320	1895	"	"
1	Jackson C. Fites	Spring	.25	2	1.5	.83	16	20 00	160	1894	"	"
2	James M. Taylor	Springs	.009	3	2	1	15	600 00	160	1894	"	"
1	Anna S. Kimball	Antelope Creek	.5	5	3	1	1	300 00	40	1894	"	"
1	W. B. Hugus	Hot Spring	.11	1		3	8	1,000 00	40	1893	"	"
3	John B. Okie	Bridger Creek	1.75	4	2.5	1	5	500 00	160	1895	"	"
3	W. R. Copeman	Beaver Creek	2	8	4	3	6	600 00	320	1895	"	"
1	Eddy Beach	Muddy Creek	.75	5	4	.66	7.5	150 00	60			
2	Thomas E. Masters	Tongue River	9					2,000 00	1,000	1895	"	"
2	Chas. Waegle	Powder River	2.7	8	4	2	4.22	1,200 00	720	1895	"	"
1	Wm. C. Hendricks	Middle Creek	1	4	2	1	5	100 00	80			
4	Green River Basin Land & Canal Co.	Green River	97	100	60	20	0.264	500,000 00	66,200	1898	"	"
3	Geo T. Beck, Jr.	Grey Bull River	3	7	6	1	6	1,100 00	440	1895	"	"
3	Elda Smith	Grey Bull River	3.5	7	6	1	7	1,200 00	560	1894	"	"
3	Phillip Jimerfield	Grey Bull River	2.5	7	5	1	6	1,000 00	320	1894	"	"
2	G. H. Aikeman et al	Spring	1.5	1.5	1	1	10	150 00	360	1893	"	"
1	Ore S. Marshall	La Bonte Creek	4	8	6	1	4	1,000 00	600	1894	"	"
3	Daniel Plumb	Grey Bull River	2.5	5	4	1	7.5	500 00	320	1894	"	"
3	G. W. L. Perkins	Grey Bull River	4	10	8	1.5	6	1,000 00	1,600	1894	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Nameo Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width. Top.	Width. Bot'm	Depth	Grade, feet per Mile.			Year	Month	Day
3	Jos. A. Dorsey	Grey Bull River	4	5	4	1.5	6	$ 500 00	320	1894	Sept.	1st
2	Daniel T. Hillman	Springs	.25	2	2	1.25	32	200 00	80	1893	"	"
4	O. A. Phillips	Slate Creek	.75	3	2	1	6.66	100 00	280	1893	"	
3	Emanuel Faust	Grey Bull River	4	15	7	4	5	1,200 00	1,280	1894	"	"
3	Lucie E. Thompson	Grey Bull River	1.33	10	4	4	10.5	1,000 00	80	1894	"	"
1	Joseph M. Carey	Box Elder Creek	3.5	12	8	2	3 16	1,200 00	1,560	1895	"	"
3	George McKay	Beaver Creek	1	5	3	2	8	500 00		1896	"	"
3	James Harvey	Grey Bull River	5 5	14	6	4	2.6	1,000 00	560	1896	"	"
3	Michael Riley	Grey Bull River	1.5	12	5	3	3	400 00	320	1895	"	"
2	Thomas J. Fisher	Smith Creek	3	11	3	4	5	800 00	320			
1	Hiram E. Wheeler	Collins Cut off Creek	2.25	12	8	2	8	300 00	240	1895	"	"
2	T. R. Dana	Herbs Creek	2	3	2	1	20	300 00	160	1895	"	"
2	J. L. Stotts	Springs	3	3	2	1.5	20	600 00	2,560	1895	"	"
1	Malcolm Campbell, Chas. L. Austin	Alkali Gulch	1.5	6	4	1	2.5	900 00	360	1895	"	"
1	Malcolm Campbell. Chas. L. Austin	North Platte River	2	8	6	1	2	1,000 00	200	1895	"	"
2	Henry W. Kellogg	Sand Creek Spring	.25	5	3		2.64	50 00	80	1894	"	"
1	James H. Pratt	North Platte River	13.5	21	16	3	1.58	12,000 00	6,120	1896	"	"
4	E. R. Noble	Big Piney Creek	2	4	3	1	5	200 00	160	1895	"	"
4	John S. Purdy	Middle Piney Creek	2 25	4	3	1	5	250 00	160	1895	"	"
1	Thomas H. Davis	Mill Creek	5	10	4	3	12	2,000 00		1895	"	"
4	Beaver Creek Improvement Irrigating Co.	Beaver Creek	8	10	8	2	6	10,000 00	2,980	1896	"	"
4	Jed Smith	Black's Fork Creek	3	9	8	1	6	700 00	160	1894	"	"
3	Henry W. Meyers	Shell Creek	6	20	10	5	5.28	1,200 00	920	1894	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
2	Mrs. E. Stewart	Middle Fork Pass Creek	2.25	4	2.5	1	12	$ 250 00	240	1895	Sept.	1st
3	Willis S. Hough	Shell Creek	1.5	12	5	4	5	300 00	320	1894	"	"
3	Wm. B. Nutting	Bennett Creek	1.5	5	3	1.5	12	400 00	120	1894	"	"
3	Wm. B. Nutting	Bennett Creek	2.5	6	4	1.66	12	700 00	240	1894	"	"
3	James R. Boggs	Stinking Water River	2.25	14	6	4	4	300 00	640	1894	"	"
3	Thomas F. Gibson	Stinking Water River	2	13	5	4	5	300 00	320	1894	"	"
3	Charles A Sarver	Stinking Water River	6	24	10	6	5	2,000 00	1,920	1895	"	"
1	Wm. Bradshaw	Willow Creek	.75	4	3	1	10	150 00	160	1894	"	"
2	Albert Erdman	Bar Creek	1.5	2.5	2	.416	26.666	300 00	200	1894	"	"
4	Simon P. Lindley	Green River	1.25	9	4	7	3.7	400 00	160	1893	"	"
1	Thos. C. Van Horn	North Platte River	1.25	3	2.5	2		2,000 00	440	1893	"	"
3	Asa Shuck	Paint Rock Creek	2.25	24	6	6	4	300 00	320	1894	"	"
2	Jno. C. Barr, Admr.	Tongue River	2	6	4	2	2	800 00	160	1894	"	"
3	Jno. M. Weisbrod	Pass Creek	1	3	2	1	.25	150 00	120	1895	"	"
4	Louis C. Jensen	Willow Creek	6	12	11	2	10	3,000 00	1,920	1896	"	"
4	Francis N Smith	Spring	1	3.5	3	1	6	50 00	80	1894	"	"
4	Chas. M. Johnson	Dry Creek	1.79	3	2.5	1	15	75 00	160	1894	"	"
3	O. Sheets	Grey Bull River	1.5	5	4	1	6	200 00	320	1894	"	"
3	John K Nichols	Grey Bull River	2.375	8	4	2	7	500 00	240	1894	"	"
3	S'lvia A. Mikkelson	Wood River	1.75	7	5	2	4	800 00	240	1895	"	"
2	Andrew J. Neilson	Big Goose Creek	.5	3	2	1	8	4,000 00	360	1894	"	"
2	Wm. P. Moore	Clear Creek	2	4	3	1	5	700 00	200	1894	"	"
1	Jos. Hull and A. J. Williams	Niobrara River	1.5	8	8	1	4.833	200 00	1,440	*		
3	Jas. A. McAvoy	Saw Mill Creek	6	6	3	1.5	10.56	4,000 00	2,320	1895	"	"
1	Merril Sanders	Niobrara River	.5	3	1	2.5	3	150 00	80	*		
3	Henry Renneberg	Willow Creek	.5	3	2	.75	6	100 00	40	1894	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width. Top.	Width. Bot'm	Depth	Grade, feet per Mile.			Year	Month	Day
3	Henry Renneberg	Renneberg Creek	.75	3	2	1	5	$ 150 00	120	1895	Sept.	1st
4	Daniel P. Gates	Spring	1	2	1	1	50	2,000 00	40	1894	"	"
4	Henry C. Kirkner	Grade Creek	1.5	4	3	1	5.28	150 00	160	1894	"	"
3	John W. Elam	Grey Bull River	1.5	12	6	3	6	300 00	240	1895	"	"
1	John Mead	Mead Creek	1.5	4	3	1.5	25	150 00	45	1894	"	"
1	Thomas H. Davis	Little Laramie River	5	10	4	3	5	3,000 00		1894	"	"
2	A. J. Powell and L. Davis	Redwater Creek	2	3	1.66	1.5		200 00	640	1894	"	"
3	Pitro Binche	Wood River Slough	.75	6	3	2	8	150 00	80	1894	"	"
3	Pitro Binche	Wood River	.75	6	3	3	5	150 00	80	1894	"	"
1	F. W. Marriott	Little Laramie River	6	15	9	3	5	6,000 00		1894	"	"
1	Sam'l W. Johnson	Medicine Bow River	3.5	8	5	6	4.375	700 00	640	1894	"	"
4	Wm. Graham	Slate Creek	3	5	4	1.5	5.28	500 00	600	1894	"	"
4	Kate E. Graham	Slate Creek	2.25	6	3	1.5	5.28	300 00	280	1894	"	"
1	Davis & Martin	North Platte River	3	8	6	1	1.5	1,100 00	520	1894	"	"
1	Millie L. Hamilton	La Bonte Creek	1.5	4.5	3.5	1.5	7	500 00	400	*		
1	Estella Johnston	North Platte River	3.5	5.5	5	3	2.5	1,000 00	760	1894	"	"
1	P. S. Steed	Clear Fork of Muddy Creek	.25	4	2	2	3	75 00	40	1895	"	"
4	John C. Auer	Willow Creek	1.5	4	3.5	1.16		250 00		1894	"	"
1	Geo. L. Hutton, agt.	S. Fork Little Laramie River	3.5	4	3	1	4	350 00	160	1894	"	"
2	Wm. Hunter and M. J. Gupton	Skull Creek	3.5	6	3.5	2	5.28	700 00	1,280	1894	"	"
4	Neils L. Larson	Dry Creek	2	3	2	1	10	50 00	160	1894	"	"
3	W. B. Beck	Grey Bull River	9	9	8	1.5	6	1,500 00	560	1895	"	"
3	Thos. Jimerfield	Grey Bull River	2.5	7	6	1	6	500 00	320	1894	"	"
1	Wm. Sturgis, Jr.	Hawk Springs	3						840	1895	"	"
2	Susan M. Bloom	Trout Creek	.75	4	3	1	5	100 00	80	1895	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions. Length in Miles.	Width Top.	Width Bot'm.	Depth.	Grade, feet per Mile.	Estimated Cost.	No. of Acres.	Date of Completion. Year	Month	Day
3	John P. Dyer	Belknap Creek	1	10	4	3	5	$ 200 00	240	1894	Sept.	1st
3	George Gebo	Bennett Creek	2.5	7	5	1	5	300 00	320	1894	"	"
3	Wm. F. Hunt	Stinking Water River	3.5	25	10	7.5	6	1,000 00	360	1895	"	"
3	George Logan	Spring Creek	.75	5	3	1	6	75 00	80	1894	"	"
1	Geo. L. Hutton	S. Fork Little Laramie	1.5	3	2	1	5	75 00	360	1894	"	"
1	Geo. L. Hutton	S. Fork Little Laramie	.875	3	3	.66	5	60 00	120	1894	"	"
1	Thomas H. Davis	Rock Creek	4	10	6	3	6	4,000 00		1894	"	"
4	John W Stoner	Smith's Fork Creek	.75	16	14	1.5	6.6	200 00	340	1895	"	"
3	James B. Pruyn	Beaver Creek (Bear Creek)	2.5	6	3	3.5	6	500 00	1,040	1895	"	"
4	Thos. Walton et al	Cottonwood Creek	5	8	6	2	20	1,500 00	510	1894	"	"
1	Thos. C. Van Horn	Springs	.5					1,000 00	120	1894	"	"
4	Geo. H. McCray	Fontenelle Creek	2.5	7	4	1	8	300 00	280	1894	"	"
1	P. C. McDonald	Big Creek	8	18	12	3.5	2	2,000 00	3.420	1895	"	"
4	Nils J. Christopherson	Dry Creek	1.5	3	2.5	1	15	75 00	160	1894	"	"
4	Richard Hincks	Dry Creek	1	3	2.5	1	25	100 00	80	1894	"	"
1	Wm. Werner	Spring							80	1894	"	"
3	Quincy A. Meyers	Piney Creek	1.5	10	4	3	4	500 00	440	1894	"	"
3	Quincy A. Meyers	Piney Creek	1	8	3	2.5	4	200 00	240	1894	"	"
3	Quincy A. Meyers	Grey Bull River	1.25	14	4	4	4	600 00	160	1894	"	"
3	Quincy A. Meyers	Grey Bull River	1.5	10	4	3	4	600 00	160	1894	"	"
3	Geo. B. Teeples	Gypsum Creek	1.25	9	3	3	6	150 00	160	1894	"	"
3	Andrew C. Kershner	Shell Creek	.75	11	3	4	6	200 00	200	1894	"	"
3	Andrew C. Kershner	White Creek	2	10	4	3	5	500 00	320	1894	"	"
3	Chas. L. Lampman	Horse Creek	2	9	3		40	200 00	280	1894	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions. Length in Miles.	Width. Top.	Width. Bot'm.	Depth	Grade, feet per Mile.	Estimated Cost.	No. of Acres.	Date of Completion. Year	Month	Day
3	Stephen A. Lampman	Horse Creek	2.25	1	1	.5	50	$ 400 00	400	*		
1	Geo. Wagner	Muddy Creek	.5	3	2	1	3	100 00	160	1894	Sept.	1st
3	James Kinney	S. Sage Creek	1	3	3	2	40	125 00	160	1893	"	"
4	Augustus W. Anderson	Bear River	7	6	4	1.5	5.28	1,200 00	440	1895	"	"
4	Christian Jensen	Big Piney Creek	2.5	5	4	1	7	125 00	320	1894	"	"
4	Christian Jensen	Big Piney Creek	1.75	4	3	1	7	75 00	160	1894	"	"
4	Andrew Homer	Middle Piney Creek	1.5	5	4	1	7	100 00	320	1894	"	"
4	Andrew Homer	Middle Piney Creek	3	5	4	1	7	200 00	320	1895	"	"
2	Ervin E. Garton	Antelope Creek	2	3	2	.041	26.66	200 00	120	1894	"	"
4	Archibald Gardner	Swift Creek	1	4	3	2	2	300 00	50	1894	"	"
4	Archibald Gardner	Swift Creek	.5	10	8	2	4	1,000 00		1894	"	"
2	Harriet C. Watkins	Dry Gulch	1.5	3	2	1	5.5	125 00	360	1895	"	"
1	Abram McCarty	Spring Creek	3.5	12	10	1.5	20	800 00	640	1894	"	"
2	Henry Keets	Inyan Kara Creek	3.5	7	4	1.5	2.65	2,500 00	640	1894	"	"
4	Enoch Venter	Swift Creek	.75	16	14	2	10	1,500 00	2,290	1894	"	"
3	Albert S. Austin	Ten Sleep Creek	3	12	4	4	4	500 00	80	1894	"	"
1	F. H. Harvey	North Platte River	1	6	4	2	2	50 00	280	1894	"	"
4	Niels S. Miller et al	La Barge Creek	2	8	5	4	5.28	200 00	320	1894	"	"
1	McUlvan & Altman	Crow Creek							80	1894	"	"
4	Jos. O. Henry	Henrie's Spring Creek	.113	2	2	1	10	10 00	80	1893	"	"
4	Stephen K. Wilber et al	Cottonwood Creek	2	6	6	1	10	200 00	480	1894	"	"
4	Jane Thomas	Yellow Creek	6.25	3.5	2.5	1	5.28	80 00	120	1894	"	"
3	Geo. W. Walters	Popo Agie River	1	2.5	1.5	1	6.66	200 00	80	1894	"	"
2	Maggie Taylor	High Water Creek	2	3	2	2	10	400 00	240	1894	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant	Source of Appropriation.	Dimensions. Length in Miles.	Width. Top.	Width. Bot'm	Depth	Grade, feet per Mile.	Estimated Cost.	No. of Acres.	Date of Completion. Year	Month	Day
3	John M. Lloyd	Red Gulch Creek	2	5	3	1	5	$ 400 00	160	1894	Sept.	1st
2	Wm. T. Gordon	Big Rapid Creek	5	3.5	3	3	15	500 00	200	1894	"	"
1	W. H. Johnston	North Platte River	1.5	3.5	3	1	3	500 00	160	1894	"	"
2	E. W. Huson	Clear Creek	1.5	5	4	1	4	500 00	120	1894	"	"
1	Frank O. Harrison	Three Mile Creek	1	8	6	3.5	15	150 00	240	1895	"	"
3	J. R. McKinnie	Grey Bull River	2	5	4	1	7	250 00	160	1894	"	"
3	Geo. Crawshaw	Springs	.33	3	2	6	12	150 00	40	1894	"	"
1	S. W. Downey	Rock Creek	3	5	4	2.5	10	1,500 00		1894	"	"
2	Harvey E. Wood	Spring	1.75	2	1	1.5	6.66	100 00	50	1894	"	"
3	Teancum Taylor, et al	Grey Bull River	7	9	7	1.5	6	1,500 00	1,280	1894	"	"
3	Daniel Willer	Grey Bull River	3.5	8	6	2	9	1,000 00	440	1894	"	"
1	C. Wellman, et al	Horse Shoe Creek	2.25	6	6	.5	3	400 00	380	1894	"	"
3	Wm. Locke	Wood River	3	6	5	3	8	300 00	160	1895	"	"
2	W. A. Orme	Spring	.113					100 00		1894	"	"
3	Richard Ashworth	Grey Bull River	3.5	12	8	2	6	1,500 00	1,160	1895	"	"
3	Acy Lovelande	Wood River	1.25	10	5	2.5	8	250 00	160	1894	"	"
4	Leroy H. White	South Chappo Creek	.1875					100 00	160	1894	"	"
1	M. N. Grant	Douglas, Beaver, Lake, Muddy [Creeks	40							1895	"	"
2	Frank N. McNutt	North Twin Creek	1.5	3	2	1.5	8	200 00	160	1894	"	"
4	I. C. Winslow	Bear River	10	7.5	6.5	3	5	5,000 00		1895	"	"
4	Wm. W. Burton	Swift Creek	.5	9	5	3	20	200 00	200			
1	G. W. Hunter	Little Beaver Creek	.75	4	3	1	10	100 00	120	1894	"	"
3	Robert B. Howells	Stinking Water River	32	26	15	5	4	70,000 00	28,800	1896	"	"
2	Jno. L. Findahl	Little Rapid Creek	1.5	5	3	1	10	50 00	440	1894	"	"
1	E. Cheesbraugh et al	Medicine Bow River	9	5	4	1.25	20	1,500 00	1,160	1895	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
3	Joseph W. Moore	Bridger Creek	1.5	6	3	1.5	6.33	$ 300 00	320	1894	Sept.	1st
2	Clarence Taffner	Taffner & West Pass Creeks	4.4	5	3	1.5	18	609 00	240	1894	"	"
3	Mary A. Pearce	Rawhide Creek	2.5	5	3	1	15	400 00	240	1894	"	"
3	Wm. D. Pickett	Grey Bull River	2.5	14	6	4	10	1,000 00	680	1895	"	"
3	Frank M. Simmons	Canon Creek	1.5	12	5	5	8	2,000 00	640	1894	"	"
3	Richard Ashworth	Grey Bull River	3	16	7	3.5	5	1,200 00	920	1895	"	"
3	Loyal Manning	Grey Bull River	2.5	8	6	.83	8	400 00	400	1895	"	"
3	Louis R. Henderson	Spring Creek	2.25	12	4	1	6	300 00	240	1894	"	"
2	Ella V. Barrett	Spring	4.5	.5			109			1895	"	"
1	Emerson H. Kimball	Big Box Elder Creek	2.3	7	5	1	2.9	875 00	280	1894	"	"
1	Wm. D. Thomas	Big Laramie River	1.5	40	20	10	1.5	27,000 00		1896	"	"
2	Laun C. Shane	Indian Creek	2	5	3	1	40	1,000 00	320	1894	"	"
3	James Lynch	Spring	.75	2	1	1.5	12	100 00	8	1894	"	"
3	Laban R. Hillsberry	Stinking Water River	28	40	30	5	4.5	100,000 00	246,000	1897	"	"
3	Ackles & Shoemaker	Bridger Creek	1.25	7	5.5	1.5	13	75 00	90	1894	"	"
4	Jacob Jones	Ham's Fork	1.75	4	3	2	10	400 00	320	1895	"	"
2	J. D. Mulholland	Inyan Kara Creek	1.5	6	4	2	17	300 00	400	1894	"	"
3	Edward H. Grinder	Stinking Water River	3	5	3	1	8	600 00	160	1895	"	"
1	Thomas A. Shaw	Cottonwood Creek	.25	4	4	2.5	7	40 00	40	*		
4	Edward P. Steele	E. Fork of New Fork Creek	1.75	4	3	1	6.66	400 00	160	1895	"	"
3	Frank W. Mondell	Stinking Water River	48	30	20	8	25	2,000,000 00	150,000	1897	"	"
3	Chas. U. Child	Grey Bull River	8	24	15	4	5.7	9,000 00	4,480	1896	"	"
3	Isaac W. Winkle	Grey Bull River	2.25	10	4	3	7	500 00	320	1895	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width. Top.	Width. Bot'm	Depth	Grade, feet per Mile.			Year	Month	Day
3	Otto Ilg	No Wood River	2.5	30	6	8.5	2.64		520	1895	Sept.	1st
3	Ozro P. Davis	Wood River	2	6	5	1.5	10	$ 500 00	160	1895	"	"
2	Jno. T. Heisler et al	N. Fork Powder River	3	6	4	1	20	1,000 00		1895	"	"
4	John M. Shirk	Black's Fork Creek	1	4	3	1	6	150 00	160	1895	"	"
3	Lewis B. Mathers	Beaver Creek	1.5	4	2	1	10.56	200 00	160	1895	"	"
1	Jos. E. Hoffman	Horse Shoe Creek		10	4	6	4	500 00	380	*		
3	Alex. McDonald	Big Horn River	1.5	8	5	1.5	5	5,000 00	160	*		
1	N. O. Johnson	Wagon Hound Creek	1.5	3	3	1			320	1894	"	"
2	John W. Stewart	Canyon Spring	1.25	2.5	2.5	2	26.66	150 00	120	1894	"	"
3	Frank James	Table Creek and Sheep Creek	2	4	3	3	8	500 00		1894	"	"
1	John Millar	Deer Creek	.5	6	4			200 00	97	1894	"	"
3	B. F. Ayers	No Wood River	1.25	10	4	4.5	6	500 00	240	1895	"	"
4	John Slavin	Spring		4	3	2.5		100 00	120	1894	"	"
4	B. F. Stewart	Coyote or Spring Creek	.75	3	1.5	1	5.28	100 00	100	1894	"	"
1	G. V. Fitzhugh	Wagon Hound Creek	1	8	6	2	3.5	500 00	240	1894	"	"
2	Frank H. Hopkins	Clear Creek	2	7	5	1	5.28	800 00	240	1894	"	"
1	D. T. Murray	Cotton Creek	5.25	7	6	1	8	500 00	160	1894	"	"
2	A. J. Ritter	N. Fork Powder River	3	4	3.5	1.5	15	600 00	340	1895	"	"
3	Robert B. Howells	Big Horn River	65	70	30	6	1	250,000 00	138,880	*		
1	Wm. Gladden	Mill Creek	1.5	2	1.5	1	26	100 00	160	1894	"	"
2	John Scott	Indian Creek	2	5	4	1	5	500 00	160	1894	"	"
1	Jos. Widdowfield et al	Medicine Bow River	3	6	5	1.5	26.66	350 00	640	1894	"	"
3	Frances E. Wood	Grey Bull River	6.5	12	10	2	6	2,000 00	4,480	1895	"	"
1	Gust Berg	Big Laramie River	4	14	10	2	2	500 00	2,080	1895	"	"
1	R. F. Hecht and Lena Hecht	Little Laramie River	3	4	3	1	5	300 00	480	1894	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
3	Albert Moog	Clark's Fork River	10	20	18	3	20	$ 20,000 00		1898	Sept.	1st
3	A. L. Corey	Bennett Creek	3.5	7	5	2.5	6	700 00		1896	"	"
3	Frank Kitts	Grey Bull River	.5	5	4	1	8	120 00	40	1894	"	"
1	James Dugan	Methodist Creek	1	4	3	8.33	12	125 00	100	1894	"	"
1	James Dugan	Methodist Creek	1.25	3	2.5	8.33	12	125 00	60	1894	"	"
2	Wm. Bowman	South Redwater	1	2.5	2	1	4	320 00	520	1894	"	"
1	James Adams	Middle Crow Creek						8,000 00		*		
2	James L. Davis	Clear Creek	2.5	6	5	1	3.7	1,000 00	480	1895	"	"
3	Dan H. Rinehart	Paint Rock Creek	1.5	6	4	1	6	600 00	160	1895	"	"
3	James Black	Grey Bull River	1.5	14	6	4	5	500 00	320	1895	"	"
3	James Lord	Spring Creek	.75	8	4	3	6	150 00	40	1895	"	"
3	David L. Enos	Dry Creek	1	5	4	1	5	300 00	160	1895	"	"
3	Francis M. Le Forgey	Stinking Water River	2	9	6	5	7	300 00	320	1895	"	"
3	Lander Canal and Reservoir Co.	Little Popo Agie River	7.5	10	6	2	8.5	8,500 00	4,400	1896	"	"
4	Will L. Simspon	Cache Creek	1	6	5	2.5	8	300 00	320	1894	"	"
2	Thos. N. Culbertson	Big Goose and Cave Creeks	2.5	3	2	1	5	400 00	160	1895	"	"
1	Geo. Hitshew	Muddy Creek	5	8	6	2	6	1,000 00	2,560	1895	"	"
4	John W. Hay et al	Ham's Fork	3	8	7	4		2,500 00	480	1895	"	"
3	A. Moog and J. K. Currie	Line Creek	6	15	12	3	32	10,000 00		*	"	"
4	Geo. A. Crofutt	Black's Fork River	25	16	12	4	1.25	25,000 00	38,400	18 6	"	"
4	Wm. S. Hughes	North Piney Creek	2	5	3.5	1.5	5	1,000 00	320	1895	"	"
1	Henry H. Foxton	Wilson Creek	1	5	3	1	5	150 00	160	1895	"	"
1	A. W. Phillips & J. B. Shoenfelt	North Platte River	15							1896	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width. Top.	Width. Bot'm.	Depth	Grade, feet per Mile.			Year	Month	Day
1	A. W. Phillips & J. B. Shoenfelt	North Platte River	8						6,400	1896	Sept.	1st
3	Loyal Manning	Grey Bull River	4.5	15	7	4	4	$ 1,000 00	440	1895	"	"
3	Louis G. Wilder	Grey Bull River	3	14	6	4	5.28	600 00	360	1895	"	"
3	Fred A. Whitney	Grey Bull River	2	13	5	4	5	600 00	320	1896	"	"
2	W. C. Dinwiddie	Gay Creek	1	3	2	1	2	250 00	160	1894	"	"
2	A. A. Heinler and F. Lord	Redwater Creek	1	2	1	1.25		125 00	320	1894	"	"
1	Wm. Dunstan	Dunstan Springs	1	4	2.5	2		200 00	320	1894	"	"
3	C. S. Waln	Little Canon Creek	2.5	8	6	1	6	500 00	720	1895	"	"
3	Robert B. Howells	Shoshone Hot Springs						20,000 00		1896	"	"
2	Thos. F. Emigh	Benton Creek	.5	3	2	1	5	100 00	120	1894	"	"
1	Frank H. Neff	Atlantic Gulch Spring	.75	2.5	1.5	1.5	13	100 00	200	1894	"	"
2	M. S. Chesebro	Big Rapid Creek	3	2	1	.75	20	200 00	160	1894	"	"
2	Big Horn Basin Colonization and Irrigation Society	Piney Creek and Branches	25					40,000 00		1897	"	"
2	Dome Lake Improvement Co.	Big Goose Creek	25					50,000 00	25,000	1897	"	"
3	Grinder Bros.	Canon Creek		5	4	1	7	150 00		1895	"	"
2	Z. G. Deual	Spring Branch	.375	5	2	1.5	20	200 00	80	1895	"	"
4	Thos. J. Anderson et al	La Barge Creek	15	20	15	2	2	2,000 00	3,280	1896	"	"
3	J. A. Schuelke	Grey Bull River	3	4	3	2	6	1,200 00	320	1895	"	"
1	Jas. M. Hoge	Land Creek	7	10	8	1.5	5	500 00	320	1896	"	"
2	Chas. Silverlock	West Pass Creek	75	3	2	1.5	13.33	60 00	360	1894	"	"
1	Albert Walter	Cow Creek	1	3	2	1	5.28	100 00	120	1895	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
4	Jos. A. Black	Big Piney Creek	2	6	4	2	13	$ 200 00	160	1895	Sept.	1st
3	Wesley Bloom	Trout Creek	1	6	5	1.5	6	250 00	120	1895	"	"
1	Chas. B. Sterrett	Brush Creek	15	26	20	3	5.28	3,000 00		1896	"	"
1	Claus H. Kose	Old Lost Springs	.5	3	2	1	4	200 00	160	1895	"	"
2	Albert Erdman	Bar Creek	.36	1.5	1	.33	53	25 00		1894	"	"
4	Andrew H. Elam	Little Muddy Creek	1.5	6	5	1.5	15	400 00	160	1895	"	"
3	Geo. L. Kenyon	Beaver Creek	1.75	12	4	3.6	6		160	1895	"	"
1	T. J. Cramer	Laramie River	2	8.6	6	1.3	10	600 00	480	1895	"	"
1	A. M. Crafts, et al	North Platte River	30	30	20	5	1.25			1896	"	"
1	Wm. Harter	Box Elder Creek	.71	2	1	1	6	30 00	120	1894	"	"
3	Edgar W. Scott	S. Fork Beaver Creek	1	6	4	1.5	10.56	900 00	1,600	1895	"	"
4	Alfred Pomeroy	Fontenelle Creek							80	1896	"	"
3	Wayne E. Shannon	Alkali Creek	1.5	10	4	3	4	200 00	160	1895	"	"
3	Hattie B. Gordon	Meeteetse Creek	.75	15	3	4	5	150 00	160	1895	"	"
3	Hattie B. Gordon	Meeteetse Creek	.5	10	3	4	5	75 00	80	1895	"	"
3	Alonzo J. Crandall	Beaver Creek	1	12	4	4	5	150 00	160	1895	"	"
3	Annie E. Meyers	Grey Bull River	1.5	12	4	4	5	400 00	240	1895	"	"
1	Mary J. Newell	Lodge Pole Creek	.75	5	4	1	2	100 00	360	1895	"	"
1	Geo. F. Morgan	Cooper Creek	.5	10	6	2	5	300 00		1895	"	"
1	H. H. Mason	Strawberry Creek		2	1.5	1.25	10.56	500 00	320	1894	"	"
1	Wm. Taylor	Big Springs	2.75	7	4	1.5	3.2		680	1895	"	"
4	Wilfred Nichols	North Piney Creek	.875	6	4	2	6.75	100 00	320	1895	"	"
2	E. L. Wheeler	Sand Creek	1	2	2	1	6	500 00	200	1895	"	"
1	W. H. Rouse and J. G. Simpson	North Platte River	3	8	5	2	4.5	4,000 00	1,040	1896	"	"
2	W. Thompson and W. Timm	Big Goose Creek	2.5	6	4	1	6	300 00	130	1895	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
3	E. S. Cheney	Big Popo Agie River	.75	3	2	1.5	12		240	*		
4	T. J. Campbell	Big Sandy River	30	45	35	10	1.5	$ 75.000 09	34,620	1897	Sept.	1st
4	T J. Campbell	Little Sandy River	18	20	14	3	2.1	15,000 00	22,400	1897	"	"
1	Joseph Dalies	Mill Creek	.75	4	2	1	4	100 00	160	1895	"	"
1	F. S. Knittle, et al	Bob's Springs	1	5	3	1	5	100 00	640	1895	"	"
1	M. N. Grant	Douglas and Elk Creeks	3	5	2	2	10	5,000 00	430	1897	"	"
1	O. P. Witt	Bed Tick Creek	2	5	3	1	5	1,000 00	440	1895	"	"
4	Jas. Jensen, Sr.	Bradshaw Creek	.5	3	2	1	20	15 00	40	1895	"	"
2	Geo. Roberts	Clear Creek	1.75	8	6	1	4.5	1,000 00	400	1895	"	"
2	Riley Colclasure	Tomaline Creek	2	3	2	1	6	500 00	160	1894	"	"
4	A. H. Reel	La Barge Creek	2.5	8	6	1.5	5		160	1895	"	"
1	Jno. A. Thompson	Sweetwater River	.87	8	5	2.5	5.28	1.000 00		1895	"	"
2	Wm. Moncreiffe	Brush Creek	.5	4	3	2	16	200 00	320	1895	"	"
1	Joseph Long	Deer Creek	1.75	5	3.5	1.5	4	250 00	160	1895	"	"
1	J. C. Schaefer	First Creek	.75	3	2	1.5	6	150 00	80	1895	"	"
4	Chas R. Kelsey	Spring	9	1			60	25,000 00		1896	"	"
4	Albert Heder	Smith's Fork Creek	.5	4	3	1	8	100 00	160	1895	"	"
1	Arthur W. Phillips	North Platte River	3.5	8	6	2	3	4,000 00	800	1895	"	"
2	Elliott Brown	Indian Creek	2.5	3	2	3	3.5	1,000 00	480	*		
2	Edward R. Odell	Mead Creek	1.5	8	6	3	12	300 00	280	1895	"	"
1	Jos. E. Hoffman	Horse Shoe Creek	7.5	4	2	3	4	100 00	160	1895	"	"
4	Geo. Whitman	La Barge Creek	1	4	3	1	5.28	200 00	160	1895	"	"
4	Edward Large	Chappel Creek	1	4	3	1	10	200 00	120	1895	"	"
4	N. H. Whitman	Conway Creek	.75	3	2	1	20	50 00	40	1895	"	"
1	Chas. A. Guernsey	North Platte River	10	56	40	8	1	150,000 00	4,160	1898	"	"
1	Chas. A. Guernsey	North Platte River	5	60	50	8	1	150,000 00	960	1898	"	"
1	Chas. A. Guernsey	Fremont Warm Springs	2					2,500 00	80	1898	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm.							
4	Moses V. Geltner	Little Gros Ventre Creek and East Spring Creek	4	8	6	2	8	$ 500 00	560	1896	Sept.	1st
4	Moses V. Geltner	Spring Creek	1.25	8	6.5	1	7	200 00	480	1895	"	"
4	Adolph Miller	Swamp Creek or Springs	.75	4	3	1.5	10	200 00	440	1895	"	"
2	Wesley Mills	Mill's Springs						200 00		1895	"	"
3	Henry G. Hay	Grey Bull River	25	50	35	5	2.1	100,000 00	65,206	1897	"	"
2	Noah Pickering	North Fork, Slater Creek	2.5	5	3	1	10.56	500 00	320	1896	"	"
3	John Mead	Bear Creek	1.75	5	5	1	5	500 00	440	1895	"	"
1	Homer W. Pollock	Spring	.5						160	1894	"	"
2	Thomas L. Thompson	S— Creek	1	2	3	1	13	300 00	40	1895	"	"
4	J. M. Woodburn	Little Gros Ventre River	.5	5	3	1	15	80 00	160	*		
4	Fred E. White	Gros Ventre River	1	10	8	1	15	200 00	160	1895	"	"
4	Louis E. Ingersoll	Black's Fork River	2.5	9	7	1	15	300 00	320	1895	"	"
1	Thomson Black	Willow Creek	1.5	3	2	2	7	3,000 00	160	1895	"	"
3	David Blanchard	North Fork, Owl Creek	.5	2	1	1	20	100 00	80	1895	"	"
3	Yellowstone Park Land & Irrigation Association	Big Horn River	55	42	30	4	2	200,000 00	32,340	1896	"	"
3	Yellowstone Park Land & Irrigation Association	Stinking Water River	15	15	9	2	5	10,000 00	5,440	1896	"	"
2	Jacob Mill	Old Woman Creek	1.5	3	2	1.5	5	400 00	200	1895	"	"
4	John Grabowski	Henry's Fork Creek	.75	3	2	1	3	100 00	160	1895	"	"
4	Chas. B. Holden	South Piney Creek	2.5	10	7	1.5	4	700 00	320	1895	"	"
4	Frank A. Mann	Smith's Fork Creek	6.5	6	5	3		1,000 00	420	1896	"	"
2	Robt H. Vosburgh	Powder River	30	42	30	6	3	120,000 00	88,320	1897	"	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
2	Hunter Smith	Big and Little Goose Creeks							160	1895	Sept.	1st
2	Commodore P. Meek	Arch Creek	2.5	4	3	1.5	5	$ 1,000 00	320	1895	"	"
2	Benj. F. Shober	Honston Creek	.5	4	3	1.5	6.66	100 00	360	*		
3	Sam'l W. Hyatt	Paint Rock Creek	1.25	10	5	2.5	5	600 00	200	1895	"	"
3	Fred P. Carr	Medicine Lodge Creek	5	16	8	3.5	5	1,500 00	1,280	1895	"	"
3	David Picard	Bridger Creek	2.5	4	2.5	1	10	300 00	240	*		
3	Ackles & Shoemaker	Pine Creek	.44	4	4	1	15	75 00	20	1895	"	"
3	Ackles & Shoemaker	Bridger Creek	.75	4	4	1	10	100 00	200	1895	"	"
1	Alverius Heaton	North Platte River	.66	5.5	4	1	2.5	500 00	120	1896	"	"
1	J. R. Kennedy	Manuel Spring	.077	3	1	6.66	50	50 00		1895	"	"
3	W. R. Williams	Brokenback Creek	1.25	4	3	1	5	250 00	240	1895	"	"
4	E. W. Bowne	South Piney Creek	5	10	8	1	6.66	500 00	840	1895	"	"
4	Erastus W. Lovatt	Scab Creek	1	6	5	2	6	200 00	160	1895	"	"
4	Erastus W. Lovatt	Scab Creek	.25	5	4	2	10	50 00	120	1895	"	"
4	Jas. C. Lowe	Dry Piney Creek	.75	3.5	2.5	1	5.28	100 00	160	1895	"	"
1	John Barkley	Barkley Creek	.75	4	3	1	9	40 00	80	1895	"	"
1	John Barkley	Barkley Creek	.75	4	3	1	8	50 00	40	1895	"	"
1	Thos. C. Van Horn et al	Springs	.5					1,000 00	80	1895	"	"
2	John Petz	Powder River	1.5	7	5	1	6	300 00	160	1895	"	"
1	Frank K. Webb	Springs	.5					100 00	10	1895	"	"
2	Frank E. Ickles	Sand Creek and tributaries	1	4	3	1	5	1,000 00		1895	"	"
2	Frank E. Ickles	Spotted Tail Creek	1	4	3	1	5	1,200 00		1895	"	"
1	Arthur W. Phillips	La Bonte Creek & Platte River	9		20		2	40,000 00	5,000	*		

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
4	Sam'l E. Osborn	Gros Ventre River	1.25	4	2	1	6	$ 100 00	200	1895	Sept.	1st
4	Wm. F. Arme	Sheep Creek	.25	4	2.5	1	15	50 00	160	1895	"	"
4	Wm. F. Arme	North Twin Creek	.5	4	2.5	1	15	100 00	160	1895	"	"
1	H. C. Mason	Spring	1					2,500 00		1895	"	"
1	Calvin L. Jessup	South Fork of Jack Creek	4.5	8	6	1	10	200 00	720	1896	"	"
4	Rudolph E. Wolfley	Birch Creek	2	5	4	1	10	100 00	320	1896	"	"
4	Alonzo Baker	Lee Creek	2	3	2.5	1	30	50 00	40	1895	"	"
2	B. F. Stephens et al	Hay Creek and tributaries	7.5					37.500 00		1896	"	"
2	John H. Farris	South Draw Creek	.5	1	.83	1	6	150 00	40	1895	"	"
2	John H. Farris	Brush Creek	.5	1	.83	1	6	150 00	40	1895	"	"
4	George Forbs	Yellow Creek	2	4	2	1.5	5.28	200 00	160	1895	"	"
2	Wiley Richardson	Spring Creek	.75	2	1.5	1	5	300 00	160	1895	"	"
1	Douglas Water Power Co.	North Platte River	3	12	8	2	1	3,500 00		1896	"	"
2	Almon D. Brown	Hay Creek	1.5	3	2.5	2	4	500 00	280	1896	"	"
4	Emory A. Scott	Salt Creek and Triple Springs	.75	3	1	1.25	7.5	100 00	160	1895	"	"
4	Emory A. Scott	Smith's Fork	2	4	2	1.5	7.5	200 00	160	1895	"	"
4	Peter J. Durney	Birch Creek	2.5	3	2	1	10	75 00	160	1896	"	"
4	Wm. C. Hudson	Birch Creek	2.25	3	2	1	10	50 00	80	1896	"	"
2	E. P. Brown	Hay Creek	2	2	1.5	2	4	500 00	80	1896	"	"
1	J. Blair Shoenfelt	North Platte River	7						9,600	1896	"	"
1	George W. Renerdick	South Fork of Deer Creek	1	8	3	6	2.5	400 00	280	1895	"	"
1	Frank K. Webb	Webb Creek	1	3.5	2.5	2		150 00	30	1895	"	"
4	Charles Robbins	Black's Fork River	1	3	2	1.5	7	100 00	160	1895	"	"
2	David Darling	Big Goose and Rapid Creek	1.25	2.5	2	2.5	12	100 00	40	1896	"	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Length in Miles.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
1	Wm. Sturgis, Jr.	North Platte River	60					2,000,000 00	156,640	1899	Sept.	1st
4	A. F. Bracken et al	Lost Creek	3.5	7	6	1	20	300 00	480	1897	"	"
2	Charles Hallquist	Spring						100 00		1895	"	"
1	George P. Clayton	Hunton Creek	1	4	2	1.5	2	100 00	200	1895	"	"
2	John Ross	Smith Creek	.6	4	3	1	13	200 00	240	1896	"	"
1	C. P. Wisdom et al	Fontenelle Creek	5	8	7	1.5	5.5	1,200 00	520	1896	"	"
1	James Dugan	Spring	.1	1	.83	.5	20	25 00		1895	"	"
2	Thos. Freegnard	Beaver Creek	1	6	3.5	1.5	6	500 00	160	1895	"	"
1	Jas. Newell	Lodge Pole or Spring Creek	1.5	6	4.5	1.5	2	200 00	160	1895	"	"
1	Chas. E. Lavell	Muddy Creek	2	6	4	3	3	100 00	160	*		
3	Marion Williams	Springs	.75					200 00		1896	"	"
1	Geo. P. Clayton	Hunton Creek	1.5	4	2.5	2	2	200 00	640	1896	"	"
2	Jesse M. Sharp	Old Woman Creek	.5	3	2.5	.66		100 00	40	1895	"	"
1	John Williams	Willow Creek	1.25	6	4	1	10	300 00	360	1895	"	"
1	Thos. Regan	Laramie River	.5	5	3	1	10		80	1895	"	"
1	Thos. Regan	Laramie River	.5	5	3	1	10		80	1895	"	"
1	F. W. Foxton	Elk Horn Creek	.75	4	3	1	5	150 00	120	1895	"	"
1	F. W. Foxton	Elk Horn Creek	1.25	4	3	1	5	200 00	160	1895	"	"
2	John T. White	Nigger Springs	.1	2	1.5	1	5	200 00	20	1895	"	"
2	Deetken & Schuh	Little Beaver Creek	5	12	10	4	4	1,500 00	2,560	1896	"	"
1	Wesley Lytle et al	La Prele Creek	10	20	10	3	2	5,000 00		1895	"	"
2	J. R. Gatewood	Tongue River	3	3	2	1	13	700 00	320	*		
3	Harold Ackland et al	Deane Creek	3	7	5	3		4,000 00		1898	"	"
3	Harold Ackland et al	Donnell Creek	2.5	7	5	3		3,000 00		1897	"	"

* Not approved.

Permits to Appropriate Water—*Concluded.*

Div. No.	Name of Applicant.	Source of Appropriation.	Dimensions.					Estimated Cost.	No. of Acres.	Date of Completion.		
			Miles in Length.	Width.		Depth	Grade, feet per Mile.			Year	Month	Day
				Top.	Bot'm							
3	Harold Ackland et al	Warmfield Creek	2.5	7	5	3		$ 3,000 00		1897	Sept.	1st
2	Deetken & Schuh	Little Beaver Creek	6	12	8	2	6.66	2,000 00	1,640	1896	"	"
3	George Sawyer	Otter Creek	.75	12	5	4	5.2	250 00	200	1895	"	"
3	J. J. Rich	Shell Creek	.875	10	5	6	5	700 00	640	1895	"	"
1	O. J. Craven	Little Beaver Creek	3	8	4	3	5	500 00	1,920	1895	"	"
2	Alfred M. Brock	N. Fork Powder River	3	3.5	2.5	1	5.5	500 00	200	1896	"	"
2	Alfred M. Brock	N. Fork Powder River	1	4	3	1	5.5	300 00	200	1896	"	"

SUMMARY.

Total number of Permits issued	416
Total number of Acres to be Irrigated	1,274,783
Total Estimated Cost	$6,328,669
Total number of Permits for Enlargements of Existing Ditches	62

TABLE No. 2.

STREAM GAUGINGS.

1893-94.

1893. STREAM GAUGINGS. DIVISION NO. 2.

Date.		Name of Stream.	Where Gauged.	Area of Cross-section.	Mean Vel. ft. per sec.	Disch'rge in cubic feet	General Remarks.
Month.	Day						
June	10	Clear Creek				304	Gauged by Elwood Mead.
June	12	" "				652	" " "
June	16	" "				178	" " "
June	22	" "		29.8	4.494	134	" " "
July	17	" "		16.09	2.32	37	" " "
June	14	Piney Creek	1 Mile below Sheridan Road			975	Piney Creek was 18 inches higher on the 13th than when gauged.
June	14	Rock Creek	At road crossing.			87	Rock Creek was 14 inches higher on the 13th than when gauged. Gauged by E. Mead.
June		Shell Creek	Sheridan Road crossing.			1	Gauged by E. Mead.
July	8	Little Piney Creek		2.7	1.6	4	Discharge above Strickett's ditches 6.35 cubic feet.
July	6	Bear Gulch Creek				2	Gauged by M. C. McFarlane.
July	6	J. A. Creek		.69	1.14	1	" " "
August	8	Stockade Beaver Creek	Below head-gate of E. Beaver Ditch No. 2			16	" " "
July	26	Sand Creek	Foot-bridge, hotel, Beulah			55	Discharge of Sand Creek Springs.
July	18	Powder River	Old stage crossing.			66	Gauged by M. C. McFarlane.
July	24	Sundance Creek	Above head of Dickenson Ditch.	1.25	.7	1	Gauged by E. Mead.
June	14	Fullerton Creek	Sheridan Road.				No running water.

1894. STREAM GAUGINGS. DIVISION No. 1.

Date.		Name of Stream.	Where Gauged.	Area of Cross-Section	Mean Vel. ft. per sec.	Disch'rge in cubic feet	General Remarks.
Month.	Day						
May	21	S. Fork Little Laramie R.	Head of Pollock and Boggs Ditch		3.57	69	Gauged by Luke Voorhees.
May	8	North Platte River	At Iron Bridge.			6,823	“ E. Mead.
June	7	“ “ “	R. R. Bridge, Orin Junction			12,596	“ “
August	15	“ “ “	“ “ “ “			816	“ Clarence Johnson.
June	6	Laramie River	Uva wagon-bridge			1,845	“ E. Mead.
Sept.	28	“ “	Wood's Landing			57	“ W. M. Gilcrest.
August	20	“ “	Near Fort Laramie			51	“ John Hunton.
Oct.	7	“ “	“ “ “			23	“ “ “
Oct.	24	“ “	At Uva			14	“ W. M. Gilcrest.
Sept.	27	“ “	Laramie City			27	“ “ “
Nov.	7	North Platte River	Near Fort Laramie			636	“ John Hunton.

1894. STREAM GAUGINGS. DIVISION No. 2.

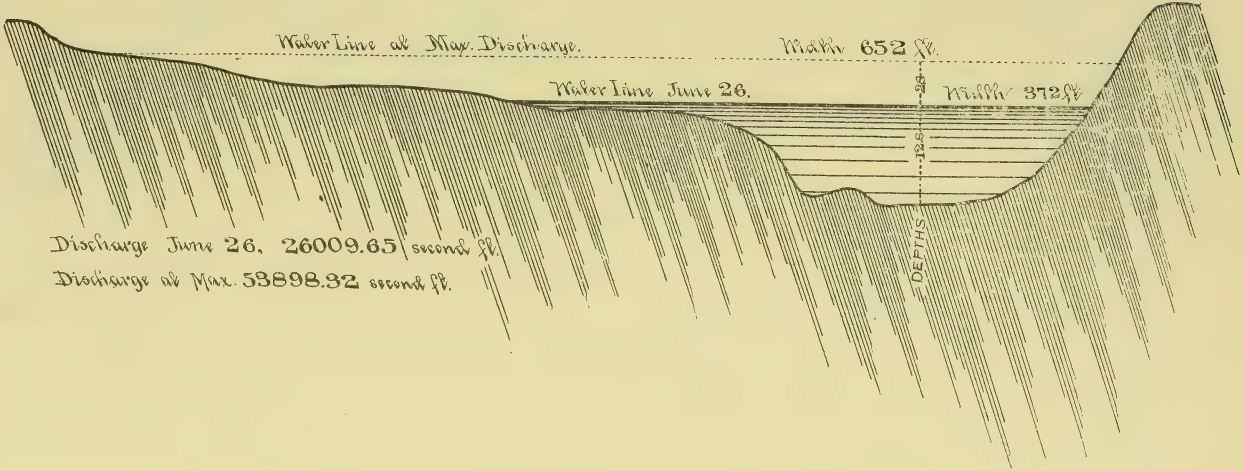
Date.		Name of Stream.	Where Gauged.	Area of Cross-section.	Mean Vel. ft. per sec.	Disch'rge in cubic feet	General Remarks.
Month.	Day						
June	14	Little Goose Creek	Below H. G. of W. Side D.			105	Gauged by M. C. McFarlane.
June	14	Wolf Creek	Canon Bridge.			63	“ “ “
June	20	Big Goose Creek	Sheridan.			463	“ “ “

1894. STREAM GAUGINGS. DIVISION NO. 3.

Date.		Name of Stream.	Where Gauged.	Area of Cross-Section	Mean Vel. ft. per sec.	Disch'rge in cubic feet	General Remarks.
Month.	Day						
July	2	Stinking Water River	Marquette's House.			4,623	Gauged by Elwood Mead.
June	25	Shell Creek	Shell P. O.		5.21	569	" " "
July	15	Wind River	Merritt's crossing.		7.35	6,209	" " "
July	12	Grey Bull River	Meeteetse Bridge.			1,209	" " "
July	17	Big Popo Agie River	25 miles below Lander.			524	Gauged by M. C. McFarlane.
July	18	Little Popo Agie River	Below Young's.			91	" " "
June	26	Big Horn River	Lovell's Ferry.			26,010	Gauged by E. Mead.

1894. STREAM GAUGINGS. DIVISION NO. 4.

Date.		Name of Stream.	Where Gauged.	Area of Cross-section.	Mean Vel. ft. per sec.	Disch'rge in cubic feet	General Remarks.
Month	Day						
July	20	Big Sandy River	Lander cut-off Trail.		2.30	148	Gauged by M. C. McFarlane.
July	21	New Fork	4 miles above forks.			2,055	" " "
July	21	Green River	Above New Fork.			2,427	" " "
July	23	North Piney Creek				285	" " "
July	23	North Branch, Middle Piney				255	" " "
July	23	Branch Middle Piney				93	" " "
							" " "
July	23	Branch Middle Piney in Canon				140	" " "
August	4	Salt River	In pass between valleys.			628	" " "
July	30	Strawberry Creek	In canon.	28.50	6.85	195	" " "
August	4	Willow Creek	Near mouth.			104	" " "
August	10	Swift Creek	Afton Bridge.			155	" " "
August	13	Stump Creek	Above head of S. Creek D'ch			67	" " "
August	17	Crow Creek	At Bridge.			77	" " "
August	21	Dry Creek	As per ditches.			56	" " "
August	25	Cottonwood Creek	" "			79	" " "
July	26	Birch Creek				25	" " "


Water Line at Max. Discharge.
Width 652 ft.
Water Line June 26.
Width 372 ft.
28
12.6
DEPTHS
Discharge June 26, 26009.65 second ft.
Discharge at Max. 53898.32 second ft.

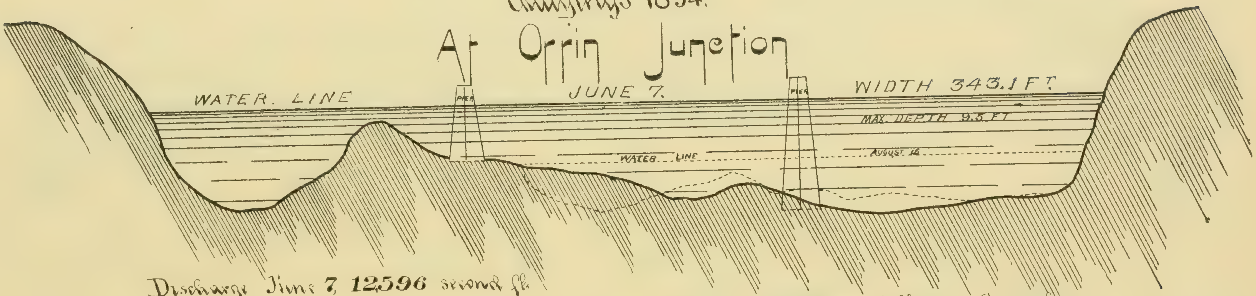
CROSS-SECTION, —
BIG HORN RIVER.

Gauging 1894 at Lovell's Ferry.

CROSS-SECTIONS.-
N. PLATTE RIVER.

Gaugings 1894.

At Orrin Junction

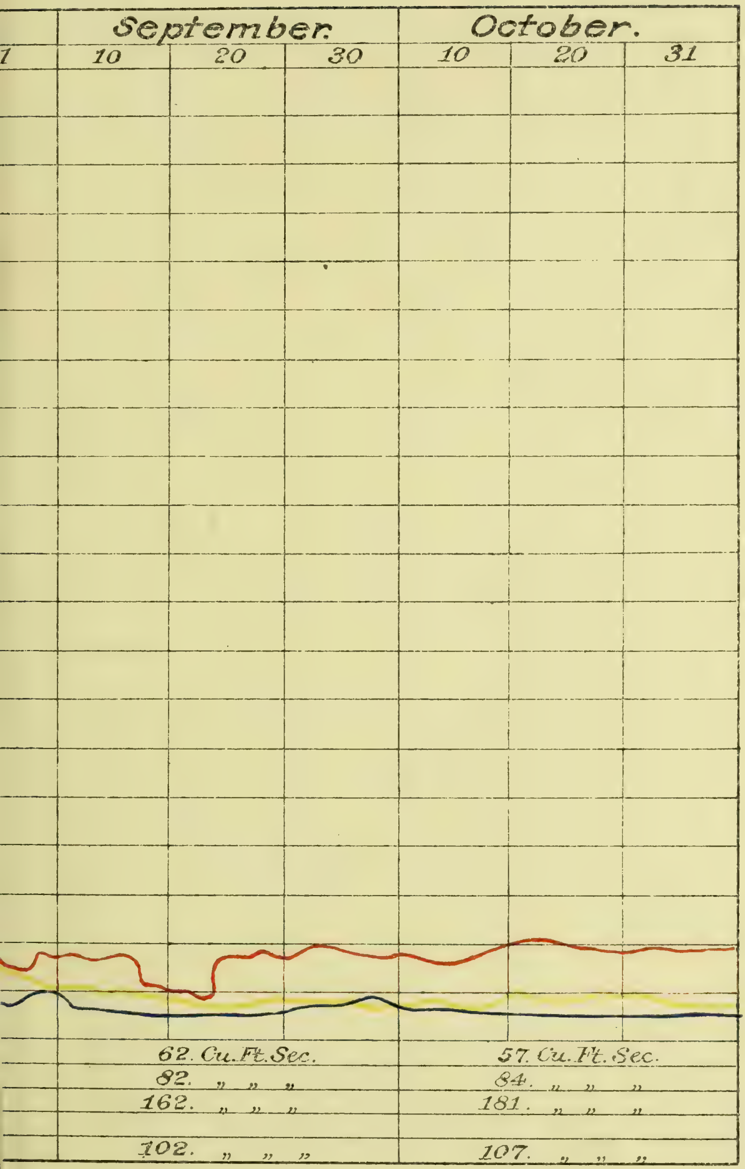


Discharge June 7, 12596 second ft.

Discharge August 15, 1019 second ft.

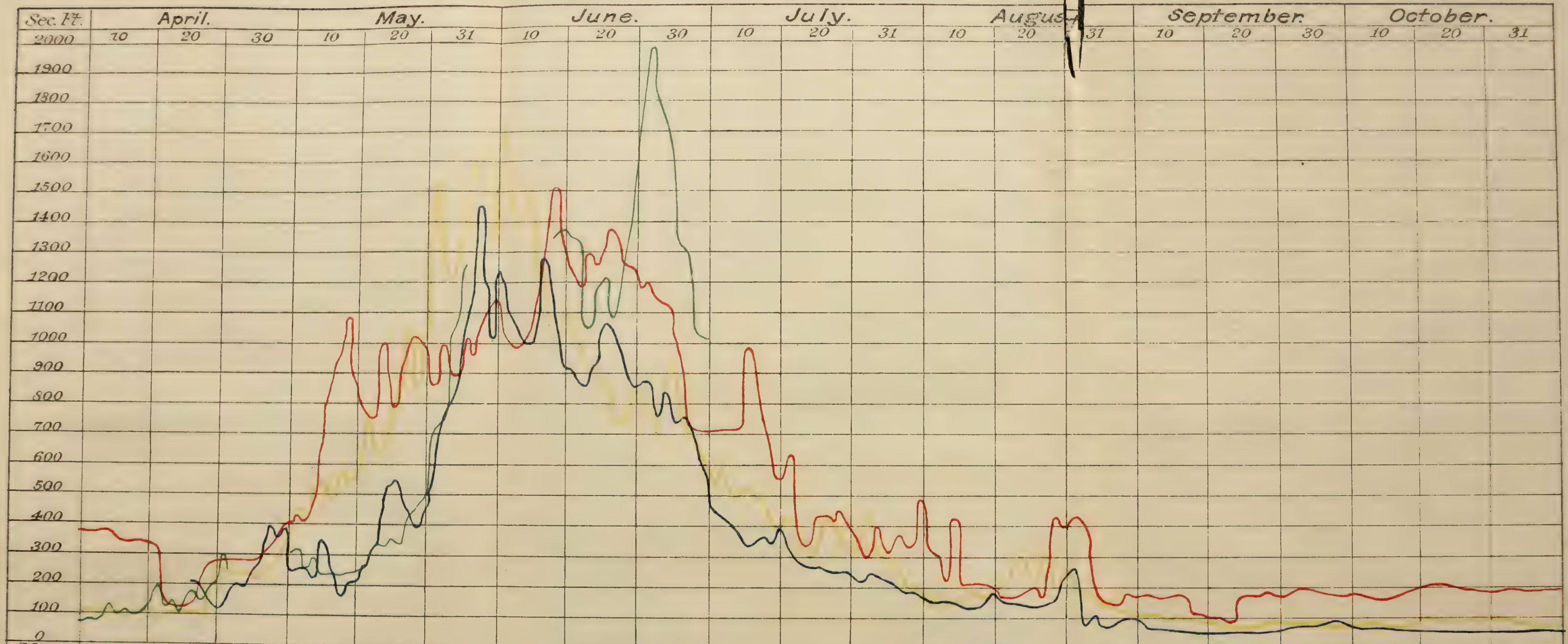
• Lower dotted line is bottom in August.

IVER.


September.
October.
10
20
30
10
20
31
62. Cu.Ft.Sec.
82. " " "
162. " " "
102. " " "
57. Cu.Ft.Sec.
84. " " "
181. " " "
107. " " "

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF LARAMIE RIVER.

GAUGING STATION AT WOOD'S LANDING.



Mean	1889 — 231. Cu. Ft. Sec.	579. Cu. Ft. Sec.	904. Cu. Ft. Sec.	284. Cu. Ft. Sec.	138. Cu. Ft. Sec.	62. Cu. Ft. Sec.	57. Cu. Ft. Sec.
"	1890 — 153. " " "	914. " " "	981. " " "	378. " " "	189. " " "	82. " " "	84. " " "
"	1891 — 274. " " "	880. " " "	1137. " " "	536. " " "	267. " " "	162. " " "	181. " " "
"	1892 — 137. " " "	460. " " "	1346. " " "				
"	Four years. 199. " " "	708. " " "	1092. " " "	Three yrs 399. " " "	198. " " "	102. " " "	107. " " "

THE S. A. BRISTOL CO. PRINTERS & BINDERS CHEYENNE, WYO.

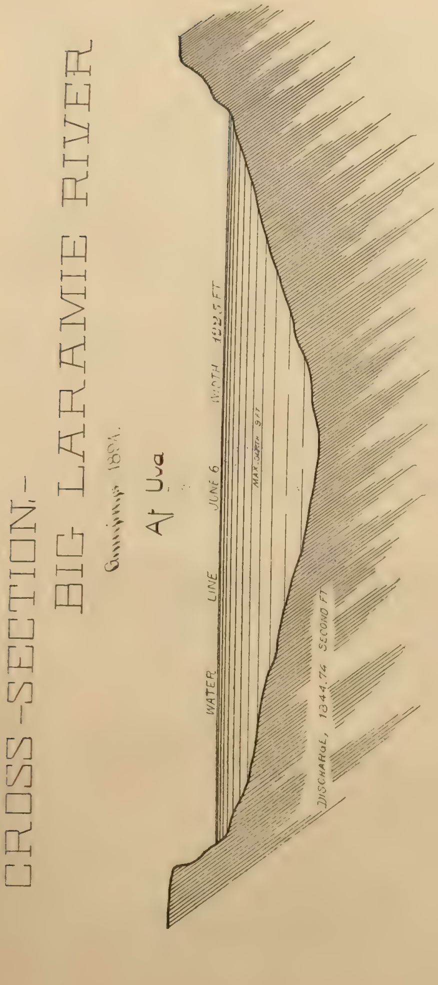
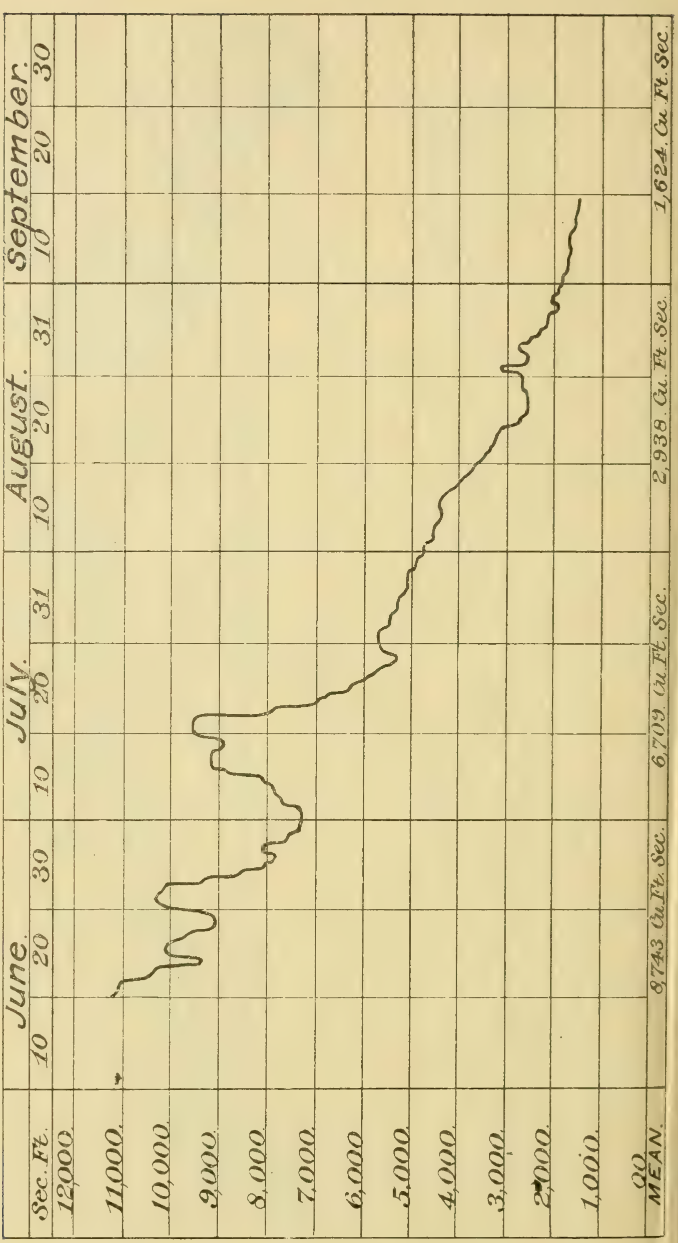

CROSS-SECTION,-
BIG LARAMIE RIVER
Gaugings 1894.
At Uva
WATER LINE JUNE 6 WIDTH 122.5 FT
MAX. DEPTH 9 FT
DISCHARGE, 1344.74 SECOND FT

DIAGRAM
SHOWING DISCHARGE OF GREEN RIVER.
1891.



SHOWING DISCHARGE OF NORTH PLATTE RIVER 1891 AND 1892

COMPILED FROM GUAGE ROD READINGS AT DOUGLAS, WYO.

1891 —— 1892 ....

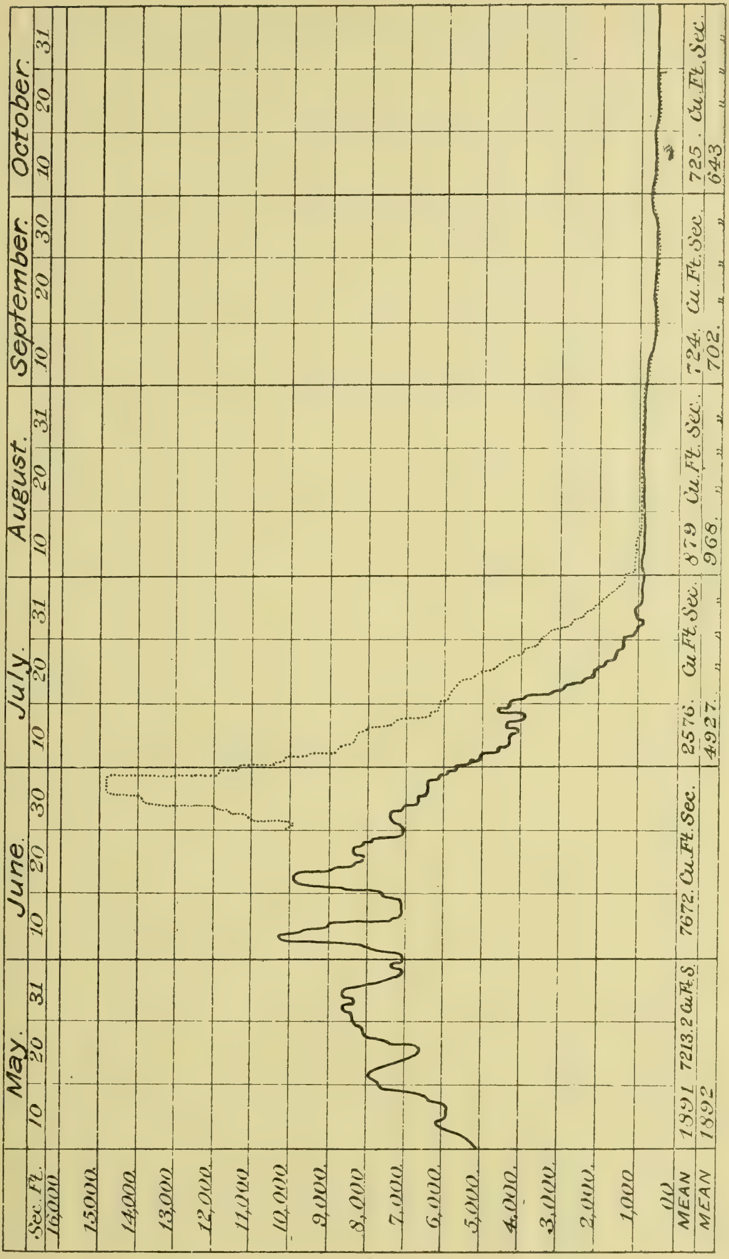


DIAGRAM
SHOWING DISCHARGE OF NORTH PLATTE RIVER.
1893 and 1894.

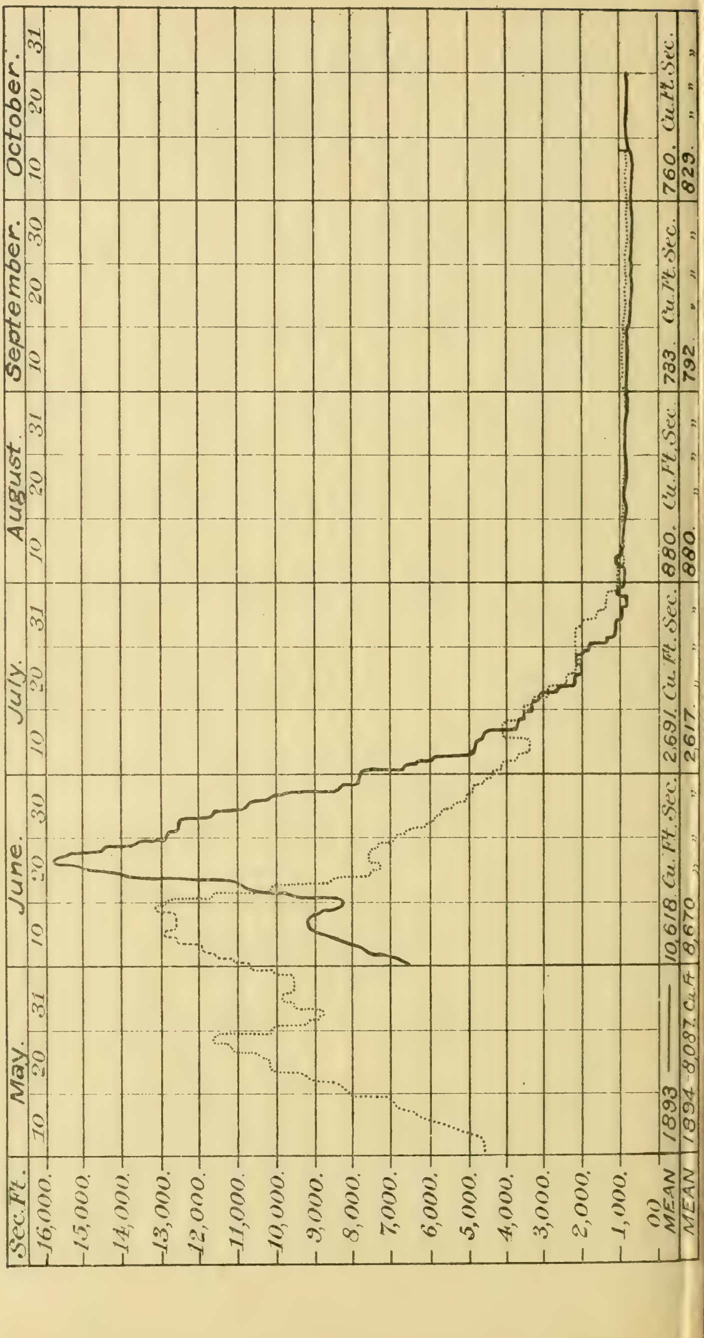
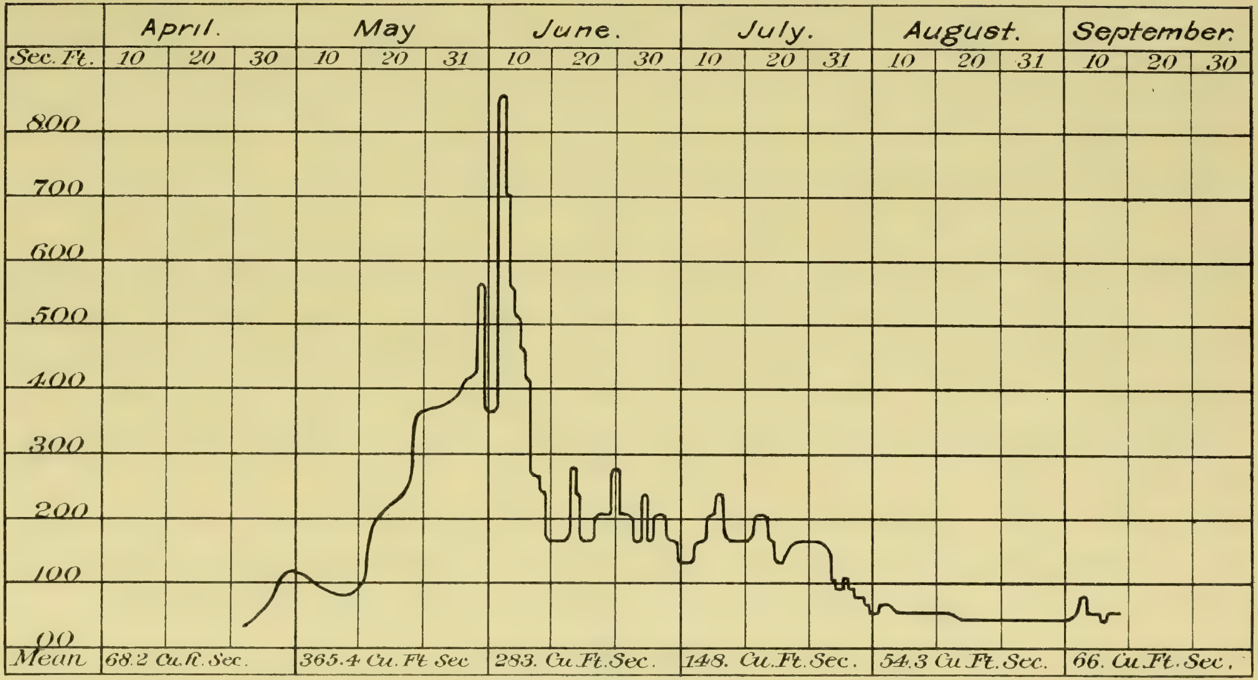


DIAGRAM
SHOWING DISCHARGE OF CLEAR CREEK IN 1894.
District No. 3, Division No. 2, Johnson Co.



DIAGRAM

SHOWING DISCHARGE OF CLEAR CREEK FOR DIFFERENT DEPTHS OF WATER IN MEASURING FLUME.

District No 3, Division No 2, Johnson Co.

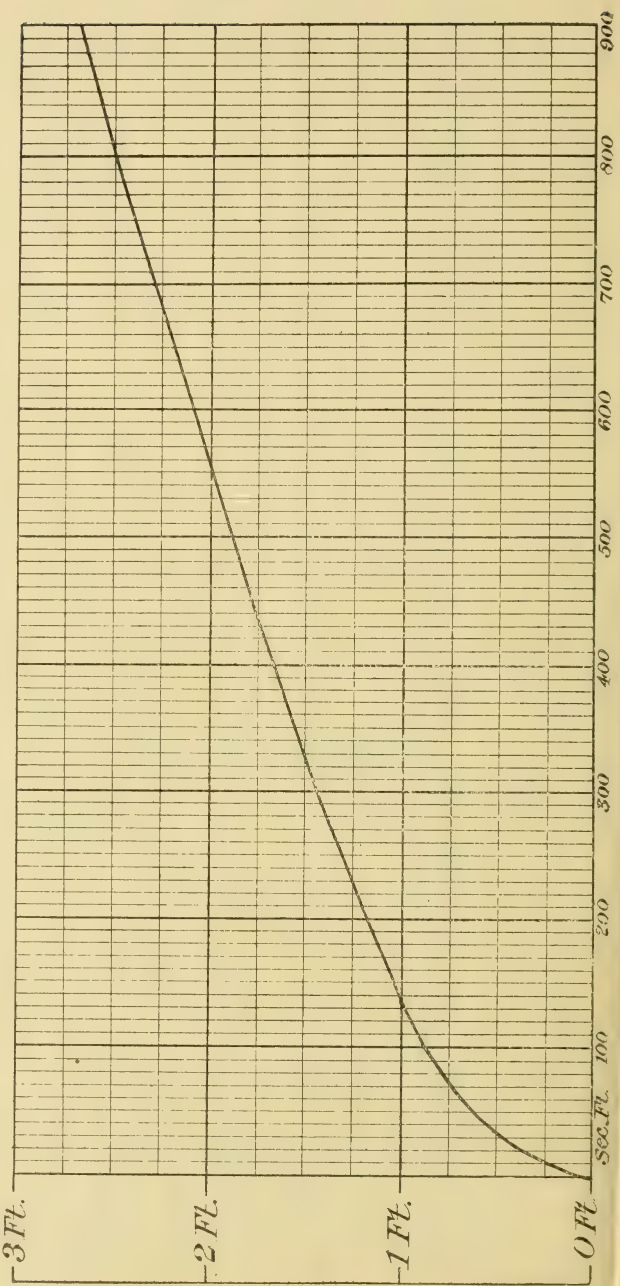


TABLE No. 3

ABSTRACT

—OF—

CERTIFICATES OF APPROPRIATION OF WATER

Issued by the State Board of Control between
Nov. 30, 1892, and Nov. 1, 1894.

WATER DIVISION NO. 1, Natrona County.

Elk Horn Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Homestead	Henry Williams and John H. Adams	March '84	Irrigation.	1.28		90
2	Emery	Joshua Stroud	Oct '84	"	6.85	1.28	480
3	West Elkhorn	Adams & Williams	April '85	"	3.20	8.13	225
4	Stroud No. 2	Joshua Stroud	" "	"	2.28	11.33	160
5	Adams & Williams	Adams & Williams	May 1 '85	"	4.28	13.61	300
6	Carroll	Joshua Stroud	June '85	"	5.71	17.89	400
7	East Elkhorn	Adams & Williams	March '86	"	1.43	23.60	100
8	Stroud No. 1	Joshua Stroud	April '86	"	2.85	25.03	200
9	Elkhorn A	A. W. Jones	July '87	"	1.71	27.88	120
10	Spring Creek	" "	Jun. 15 '88	"	.43	29.59	30
11	Corbett	John J. Corbett	1888	"	.57	30.02	40
12	Elkhorn B	A. W. Jones	Sept. '90	"	2.14	30.59	150

Cabin Creek.

1	Carey Cabin Creek Nos. 1 & 2	J. M. Carey & Bro.	July 10 '85	Irrigation.	9.14		640

Dobbins Springs.

1	Spring	Martin Gottenberg	Feb. 20 '86	Irrigation.	1.00		70

Loomis Creek.

1	Mrs. Rhodes	Hannah B. Rhodes	April '86	Irrigation.	.57		40

WATER DIVISION NO. 1, Natrona County.

Dry Muddy Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Muddy Creek Nos. 1 & 2	Peter Nicalysen	Apr. 1 '84	Irrigation.	2.85		200
2	Carey Dry Muddy Nos. 1 & 2	J. M. Carey & Bro.	Jun. 13 '86	"	10.85	2.85	760

Squaw Creek and Tributaries.

1	Rice Nos. 1 & 2	Oliver M. Rice	Fall '86	Irrigation.	1.85		130
1	Rice	" "	Fall '86	"	.71	1 85	50

Garden Creek and Tributaries.

1	Carey Garden Creek No. 1	J. M. Carey & Bro.	May 1 '85	Irrigation.	4.28		300
1	" " " " 5	" " "	" 1 "	"	9.14	4.28	640
2	" " " " 2	" " "	Oct. 1 "	"	12.57	13.42	880
2	" " " " 3	" " "	" 1 "	"	5.71	"	400
2	" " " " 4	" " "	" 1 "	"	5.14	"	360
2	" " " " 6	" " "	" 1 "	"	2.85	"	200
2	" " " " 7	" " "	" 1 "	"	4.28	"	300
2	" " " " 8	" " "	" 1 "	"	2.28	"	160

WATER DIVISION NO. 1, Carbon County.

Snake River and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Reed	Lycurgus Calvert	March '75	Stock & Irrigation	2.90		200
1	"	Bernard Hynes	" "	Stock & Irrigation	.60		40
1	"	William Carney	" "	Stock & Irrigation	.60		40
2	Perkins	Charles P. Perkins	June '77	Stock, Domestic & Irrigation	.80	4.10	50
3	Baggs	Robert Temple	Fall '77	Stock, Domestic & Irrigation	1.60	4.90	110
3	"	Robert Temple, agt., Edward Bailey	" "	Stock, Domestic & Irrigation	1.20	"	80
4	Aylesworth	Lydia Aylesworth	June '78	Irrigation	.21	7.70	15
5	Lynch	James Lynch	Season '82	"	5.71	7.91	400
6	George Wren	George Wren	Oct. 1 '82	Domestic & Irrigation	1.50	13·62	100
6	George Wren	Jerry Shehan	" 1 "	Stock, Domestic & Irrigation	1.50	"	100
6	George Wren	James Douglas	" 1 "	Irrigation	1.00	"	70
7	Perkins	Charles F. Perkins	Nov. 12 "	"	3.71	17.62	260
8	Carruthers	J. M. Calvert	Fall '84	Stock & Irrigation	1.75	21.33	120
8	"	Lycurgus Calvert	" "	Stock & Irrigation	2.35	"	160
8	"	R. O. Cook	" "	Stock & Irrigation	2.35	"	160

WATER DIVISION NO. 1, Carbon County.

Snake River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
9	High Line	John C. Kane	Mar. 18'85	Stock and Irrigation.	2.1	27.78	140
10	Brush	Elmore A. Goodman and Oscar J. Goodman	Mar. 28'85	Irrigation.	4.85	29.88	340
11	John Irons	John Irens	Apr. 10'86	"	.57	34.73	40
12	Baker	James Baker	Early '86	"	1.43	35.30	100
12	"	James Douglas, President Dixon Townsite Co.	" "	"	.57	"	40
13	Baggs	John Irons	Oct '87	"	2.85	37.30	200
13	"	Platt A. Hinman	" "	"	2.00	"	140
13	"	Sarah Carroll	" "	"	1.43	"	100
13	"	Lon Godelt	" "	"	2.00	"	140
14	Extension Reed	Richard C. Magor	" "	"	1.43	45.58	100
15	Bennett and Aylesworth	S. B. Bennett, agent; W. H. Challis	Fall '87	"	.57	47.01	40
15	" "	C. H. Aylesworth	" "	"	.57	"	40
16	Highland	P. T. Hines, Secretary Highland Ditch Co.	Sept. '88	Stock, D'mestic, Irrigation.	6.85	48.15	480
17	Baggs	A. T. Hamer, John L. Foote, agent	Dec. 4 '89	Irrigation.	1.43	55.00	100
18	Aylesworth	Lydia O. Aylesworth	Season'90	"	1.21	56.43	85
19	Snow	Jerry Shehan	Aug. '90	"	1.14	57.64	80
19	"	James Douglas	" "	"	2.85	"	200

WATER DIVISION NO. 1, Carbon County.

Savery Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Matthews, Baker & Easam	James Douglas	Sept. 15 '80	Domestic & Irrigation.	.30		20
1	" " "	John H. Easam	" " "	Stock, Domestic & Irrigation.	1.21		85
1	" " "	Burret Littlefield	" " "	Irrigation.	2.28		160
1	" " "	James Baker	" " "	"	2.28		160
2	Strowbridge & Andrews	Joseph Morgan	June 1, '81	Domestic & Irrigation.	.60	6.07	40
2	" "	Strowbridge, Andrews & Co.	" " "	Irrigation.	1.43	"	100
3	Kelsey & Reeder	A. R. Reeder	Aug. 26, '82	"	.71	8.10	50
3	" "	W. G. Reeder	" " "	"	.71	"	50
4	Brewster & Clay	J. W. Brewster	Oct. 12, '83	"	1.43	9.52	100
4	" "	Robert Gooldy	" " "	"	1.14	"	80
4	" "	H. S. Hays	" " "	"	.93	"	65
5	McCarey, Gooley & Wilson	Joseph Wilson	Spring '84	Stock, Irrigation.	.55	13.02	35
5	" " "	James Douglas	" "	Domestic & Irrigation.	.30	"	20
6	Lambert & Irwin	Edwin Lambert, C. C. Irwin	June '85	Irrigation.	2.85	13.87	200
7	Kelsey & Reeder	Frank Kelsey	Spring '86	"	1.43	16.72	100
7	" "	A. R. Reeder	" "	"	1.00	"	70
7	" "	W. G. Reeder	" "	"	1.00	"	70
8	Mesa Irrigating Canal	James Douglas, President Mesa Irrigating Canal Co.	" "	Domestic & Irrigation.	20.00	20.15	1,400
9	Matthews, Baker & Easam	James Douglas	Season '86	Irrigation.	.43	40.15	30
10	Dexter & Morgan	John L. Foote	1887	Mining & Irrigation.	2.85	40.58	200
11	McCarty Nos. 3 & 4	William McCarty	April '87	Irrigation.	1.43	43.43	100

WATER DIVISION NO. 1, Carbon County.

Savery Creek and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
12	German	Joseph Kohleffel	May '88	Irrigation.	.35	44.86	25
13	Kelley	Joseph Morgan	June 1 '88	"	1.00	45.21	70
14	Little Sandstone	Joseph Kohleffel	June '88	"	.25	46.21	18
15	McCord	George C. McCord	Nov. 15 '88	"	1.85	46.46	130
16	Turner	Robert Turner	Dec. 10 '88	"	1.14	48.31	80
17	Ladd	Robert Gooldy	June 5 '89	"	1.07	49.45	75
18	Brewster & Clay	" "	Season '89	"	.78	50.52	55
19	Man & Ivey No. 1	Charles C. Ivey	June '89	"	.35	51.30	25
19	" " " 2	Sidney Man	" "	"	1.14	"	80
19	" " " 3	Charles C. Ivey	" "	"	.21	"	15

WATER DIVISION NO. 1, Natrona County.

Muddy Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Brooks No. 1 on Main Muddy	B. B. Brooks & Co.	April 1 '83	Irrigation.	2.85		200
2	Mascotte No. 1	" " "	July 15 '84	"	.71	2.85	50
3	Brooks No. 1, Beaver Creek	" " "	Nov. 12 '84	Stock.	7.24	3.56	500
3	" " 2	" " "	" " "	Irrigation.	2.85	"	200
4	Carey Muddy Creek No. 1	J. M. Carey & Bro.	June 1 '85	"	13.14	13.65	920
5	Walters	G Walter Breon	April '86	"	.57	26.79	40
6	Muddy Creek No. 1	Chas. C. Webel	Spring '86	"	2.85	27.36	200
6	" " " 1	H. Aultman, President Muddy Creek Ditch Co.	April '86	"	10.71	"	750
6	" " " 2	Same as above.	" "	"	8.71	"	610
7	Goose Creek	O. K. Garvey	May '86	"	.85	49.63	60
7	" "	William Jones	" 1 "	"	1.14	"	80

WATER DIVISION NO. 1, Natrona County.

Muddy Creek and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
8	Beech No. 3	Eddy Beech	May 10 '86	Irrigation	.33	51.62	23
9	Brooks No. 3	B. B. Brooks & Co.	" 20 "	"	.57	51.95	40
10	Mascotte No. 2	" " "	June 1 '86	"	.57	52.52	40
11	Wagoner	George J. Wagoner	Mar. 10 '87	"	.57	53.09	40
11	Wagoner & Whittacer	Thomas Steed	" " "	"	.71	"	50
11	" "	Geo. J. Wagoner	" " "	"	1.71	"	120
11	" "	James A. Whittacer	" " "	"	1.43	"	100
12	Beech No. 1	Joseph H. McNealy	May 1 '87	"	.30	57.51	20
12	" " "	Eddy Beech	" " "	"	.57	"	40
13	Muddy Creek	Chas. C. P. Webel	" " "	Stock, Domestic & Irrigation.	1.80	58.38	120
14	Webel	" " "	June '87	Irrigation	.43	60.18	30
15	Milne	James Milne	Nov. '87	"	.85	60.61	60
16	Silver State No. 1	James Carey	Feb 15 '88	"	6.43	61.46	450
17	Hines No. 1	William P. Hines James M. Hines } Hines Bros.	March '88	"	2.00	67.89	140
17	" " 2	William P. Hines James M. Hines } Hines Bros.	" "	"	2.28	"	160
18	Langer & Milne	Estate Fritz Langer, Wm. Keith, administrator.	April 1 '88	"	.57	72.17	40
18	" "	James Milne	" " "	"	1.43	"	100
19	Keith Nos. 1 & 2	William Keith	May '88	"	.85	74.17	60
19	Garvey	Oakley K. Garvey	" "	Domestic & Irrigation.	.35	"	20
20	Dutch Charley	Patton & Beggs	Spring '88	Irrigation.	1.14	75.37	80
21	Milne No. 2	James Milne	March '89	"	.57	76.51	40
22	Hendricks	William C. Hendricks	April '91	"	.57	77.08	40

WATER DIVISION NO. 1, Carbon County.

Muddy Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Littlefield	Ora Haley	April '84	Stock, Irrigation.	1.50		100
2	Horse Gulch	Perry L. Smith	Aug. 1 '86	Irrigation.	.57	1.50	40
3	Boner	Leander N. Boner	Oct 10 '86	Stock, Domestic & Irrigation.	.50	2.07	30
4	Rankin Nos. 1, 2 and 3	James G. Rankin, Joseph R. Rankin, Perry L. Smith, J. Hurt	Nov. 20 '86	Irrigation.	6.43	2.57	450
5	Basin	H. E. Van Housen, Perry L. Smith, agent	Oct. 20 '87	"	4.28	9.00	300

Battle Creek (a Tributary of Snake River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Salisbury	Albert W. Salisbury	June '84	Irrigation.	.57		40
1	Wilson	" " "	Summer '86	"	.10		5
2	Beeler	Conrad M. Beeler	Nov. '86	Domestic & Irrigation.	.75	.67	50
3	Battle Creek	Battle Creek Ditch Co., James Douglas	July '89	Irrigation.		.67	

Pine Tree Creek (Tributary of Muddy Creek).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Kenty	William McCarty	April 10 '83	Irrigation.	.43		30
2	Bertha	" "	May 8 '84	"	.43	.43	30

WATER DIVISION NO. 1, Laramie County.

Horse Shoe Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Walker No. 1	Andrew Gilchrist	Apr. 15 '79	Domestic & Irrigation.	11.53		800
2	" " 2	" "	Nov. 15 '80	Stock, Irrigation.	3.07	11.53	208
3	" " 1	Robert M. Walker	Summer '81	Domestic & Irrigation.	2.53	14.60	170
3	" " 1	Allen Laughlin	" "	Irrigation.	2.10	"	140
4	St. Dennis	Michael Moran	May 15 '82	Domestic & Irrigation.	1.29	19.23	90
5	Walker No. 3	Andrew Gilchrist	Oct. 15 '82	Irrigation.	4.56	20.52	312
5	P. Hall	Patrick J. Hall	April 1 '83	"	1.17	"	75
6	John Moran No. 1	John Moran	Spring '83	"	1.39	26.25	90
7	Gordon	David Gordon	March '84	Stock, Irrigation.	1.50	27.64	100
8	Moran & Torgerson	James Moran	May 1 '84	Irrigation.	.67	29.14	40
8	" "	Torval Torgerson	" 1 "	"	1.39	"	90
9	Macfarlane No. 1	William Macfarlane	Spring '84	Domestic & Irrigation.	1.53	31.25	100
10	Thos. Freaney Nos. 1 & 2	Thomas Freaney	July 15 '84	Irrigation.	2.10	32.73	140
11	Reeder	James R. Reeder	Nov. 15 '84	"	3.67	34.83	250
12	John Moran No. 2	John Moran	Mar. 10 '85	"	2.96	38.50	200
13	W. S. Waln	Winfield S. Waln	March '85	"	.60	41.46	35
14	Peter Paulsen No. 1	Peter Paulsen	April 15 '85	Stock, Irrigation.	1.10	42.06	70
15	Thos. Freaney No. 3	Thomas Freaney	Feb. 15 '86	Irrigation.	1.10	43.16	70
16	Wellman & Dupe	Clark W. Wellman	Fall '86	"	.39	44.26	20
17	Peter Paulsen No. 2	Peter Paulsen	April '87	"	.39	44.65	20
18	Conalo	William Conalo	June '87	"	.31	45.04	15
19	St. Dennis	Michael Moran	1887	"	.24	45.35	10
20	John Moran No. 2	William Conalo	June '88	"	1.96	45.59	130

WATER DIVISION NO. 1, Laramie County.

Horse Shoe Creek and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second	Acres Irrigated.
21	P. Macfarlane	Peter Macfarlane	May '89	Irrigation.	1.20	47.55	83
22	Shives No. 1	Ferguson Shives	1889	"	1.81	48.75	120
23	Howard Smith & McDermott	Isabella Baird	Nov. '89	"	1.96	50.56	130
23	" " "	Bridget McDermott	" "	"	2.30	"	160
24	Macfarlane No. 1	William P. Macfarlane	1891	"	2.04	54.82	136
25	Moran & Torgersen	James Moran	1891	"	.80	56.86	55
26	MacFarlane No. 2	Wm. P. Macfarlane	Sept. 12 '91	Stock, Irrigation.	.80	57.66	50
27	Patrick Freaney	Patrick Freaney	Dec. 1 '92	Irrigation.	1.39	58.46	90
27	" "	Winfield S. Waln	" " "	"	1.17	"	75
28	Howard Smith & McDermott	Peter Paulsen	Jan. 1 '93	"	1.07	59.63	75

WATER DIVISION NO. 3, Fremont County.

Beaver Creek (Tributary of Big Horn River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second	Acres Irrigated.
1	Miller	William L. Vaughn	1878	Irrigation.	.86		60
2	Warm Spring	Andrew Larson	Spring '80	Irrigation & Bathing.	.57	.86	40
3	Miller	Wm. L. Vaughn	1880	Irrigation.	.29	1.43	20
4	Samuel P. Large	Mary H. Strayer	May 1 '86	Stock, Domestic & Irrigation.	15.00	1.72	1,000
5	E. Coffey	Thomas P. Tway	June '87	Irrigation.	.71	16.72	50
6	Warm Spring	Andrew Larson	1887	"	.29	17.43	20
7	McKay	Peter McKay	April '90	"	.14	17.72	10
8	Spangler	Caroline Kime	Spring '91	Stock, Domestic & Irrigation.	1.50	17.86	100

WATER DIVISION NO. 3, Fremont County.

North Fork Popo Agie (Tributary of Popo Agie River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Grant	Anne Grant	1870	Irrigation.	.79		55
2	O'Brien	William O'Brien	1875	Stock, Irrigation.	3.00	.79	186
3	Mealman	Hiram Mealman	April '76	Irrigation.	1.77	3.79	124
4	Laird	James G. Laird	May 10 '76	"	1.76	5.56	123
5	Dickinson	Peter P. Dickinson	Spring '76	"	1.14	7.32	80
6	Mountain Ranch	Nathan G. Mason	July 10 '77	"	.10	8.46	7
7	Harrison	Hannah Harrison	Fall '77	"	2.14	8.56	150
8	Boulder	Nathan G. Mason	Spring '78	"	.36	10.70	25
9	Fremont County Mill Co.	Chas. E. Fogg, President Fremont County Mill Co.	Fall '79	Mechanical.	25.00	11.06	
10	Milford	Riley Garrett	1879	Stock, Irrigation.	2.90	36.06	180
11	Wilson	Asil T. Wilson	June 15 '81	Irrigation.	2.03	38.96	142
12	Shady Grove	Thomas Shockley	Before '82	Stock, Domestic & Irrigation.	.30	40.99	1.5
13	Lanigan	Edward Lanigan	Spring '82	Irrigation.	1.14	41.29	80
14	Silbers & Bowman	Charles Silbers	1883	Stock, Domestic & Irrigation.	.60	42.43	23
14	" "	Louisa E. Bliss	1883	Irrigation.	1.43	"	100
14	" "	Andrew J. Bowman	Spring '83	Stock, Irrigation.	1.35	"	80
15	North Fork	William H. Wygal	Apr. 29 '84	Irrigation, Stock & Domestic.	1.30	45.81	75
15	" "	William Van Patten	" " "	Stock, Domestic & Irrigation.	1.70	"	100
51	" "	Lyman E. Baldwin	" " "	Stock, Domestic & Irrigation.	1.00	"	61
15	" "	Edward T. St. John	" " "	Stock, Domestic & Irrigation.	2.00	"	110

WATER DIVISION NO. 3, Fremont County.

North Fork Popo Agie—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
15	North Fork	John C. Steers	April 29 '84	Stock, Domestic & Irrigation.	1.30	45.81	75
15	" "	Riley Garrett	" " "	Irrigation, Stock.	1.90	"	120
15	" "	Peter P. Dickinson	" " "	Irrigation.	.17	"	12
15	" "	Josephine E. Baldwin	" " "	Stock, Domestic, & Irrigation.	.20	"	10
16	Big Cottonwood	Edward A. Gustin	Apr 15 '85	Stock, Domestic & Irrigation.	3.50	55 38	200
16	" "	Kempel & Schneider	" " "	Stock, Domestic & Irrigation.	3.15	"	200
16	" "	Bay & Steers	" " "	Stock, Domestic & Irrigation.	3.50	"	200
16	" "	Edward L. Ranney	" " "	Stock, Domestic & Irrigation.	4.50	"	296
16	" "	August Leseberg	" " "	Stock, Domestic & Irrigation.	2.50	"	150
16	" "	Anna Peterson	" " "	Stock, Domestic & Irrigation.	2.75	"	150
16	" "	Mary A. Peterson	" " "	Stock, Domestic & Irrigation.	2.00	"	120
16	" "	Oron O. Meyers	" " "	Stock, Irrigation & Domestic.	3.50	"	225
16	" "	John R. Harris	" " "	Stock, Domestic & Irrigation.	3.15	"	200
17	Mosquito	Clifton P. Trimble	Spring '85	Irrigation.	.21	83.93	15
17	"	James Forrest	" "	Stock, Irrigation.	.50	"	23
18	Consolidated	Edward Alton	April '86	" "	1.20	84.64	70

WATER DIVISION NO. 3, Fremont County.

North Fork Popo Agie—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
19	Milford Lateral	Anne Grant	Latter part of May '86	Irrigation, Stock.	1.75	85.84	112
20	Bragg	Robert Bragg	Spring '86	Irrigation.	.07	87.59	5
21	Mountain Range	Thomas Shockley	Mar. 10 '87	"	1.71	87.66	120
21	" "	Fred H. Leseberg	" " "	"	2.07	"	145
21	" "	Aaron Vetter	" " "	Irrigation, Stock & Domestic.	1.00	"	60
22	Standish	Riley Standish	1887	Irrigation.	.29	92.44	20
23	Davies	John Davies	Spring '88	"	.36	92.73	25
24	Consolidated	Andrew Downey	1888	Stock, Domestic & Irrigation.	.60	93.09	30
25	Garden	Edward Alton	May '89	Irrigation.	.17	93.69	12
26	Consolidated	Frank L. Doane	1889	Stock, Domestic & Irrigation.	.35	93.86	22

WATER DIVISION NO. 2, Crook County.

South Beaver Creek (Tributary of Belle Fourche).

1	Hawken's	John R. Hawken	Fall '85	Irrigation.	.50		30
1	"	W. R. Hawken	" "	"	.25		10
2	South Beaver Irrigating	Julius Hewes	June 15 '87	Domestic & Irrigation.	.81	.75	50
3	Riverside	W. R. Hawken	Oct. 1 '88	Irrigation.	.10	1.56	2

WATER DIVISION NO. 1, Carbon County.

Beaver Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
19	Toothaker	W. H. Toothaker and W. N. Toothaker	Summer '89	Irrigation.	4.14	33.47	290

South Spring Creek.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
18½	South Spring Creek Irrigation Co.	C. S. Miner	Jan. '85	Irrigation.	1.14	60.04	80

Sage Creek (Tributary of North Platte River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Galbraith Nos. 1 & 2	R. N Galbraith, Frank Blake	1885	Irrigation.	.20		12
2	Fairview	Robert Middlewood	1887	"	1.71	.20	120

Pass Creek (Tributary of North Platte River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
44	Hardin Robinson	Charles Hardin, Joseph Robinson & Frank Rider	April 15 '91	Irrigation.	13.71	125.98	960
45	Case	J. A. Schoonjaus	July 15 '91	"	1.14	"	80

WATER DIVISION NO. 1, Natrona County.

Spring, Sec. 6, Township 31, Range 81.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Matz Nos. 1 & 2	Reinhold Matz	March '90	Irrigation.	.70		50

East Fork of Muddy (Tributary of Platte River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
23	Walters	G. Walter Breon	Apr. 21 '91	Irrigation.	.57	77.65	40

WATER DIVISION NO. 2, Sheridan County.

Columbus Creek (Tributary of Tongue River).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
9	Whitcomb No. 1	Hugo Beyer	Season '92	Stock & Domestic.	1.80	34.80	122
Pass Creek.							
8	Summit	J. W. Crew	March '87	Irrigation.	.36	27.39	25
18	Emery	Frank X. McNutt, G. A. Lapoint, Geo. Emery	April 10 '90	"	.76	45.69	53
19	Jones	Cecil J. Huntington	July 1 '92	"	1.43	46.45	100
Twin Creek.							
4	Brittan	Wesley Brittan	May '86	Irrigation.	.571	3.78	40
6	Last Chance	Peter Reynolds	Nov. 14 '89	"	1.714		120
WATER DIVISION NO. 1, Albany County.							
Hecht Creek (Tributary of Little Laramie River).							
131	Lena Hecht	Lena Hecht	June 1 '92	Irrigation.	2.14	676.13	150
Little Laramie River and Tributaries.							
130½	Markle	Soren P. Christenson	June '91	Irrigation.	2.00	676.13	140

WATER DIVISION NO. 2, Sheridan County.

Big Goose Creek.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
28	Big Goose & Beaver	Frank B. Curtis	Aug. 29 '85	Irrigation.	1.14	241.85	80
28	" "	James H. Knight	" " "	"	9.14	"	640
28	" "	Leon Lambrigger	" " "	Domestic & Irrigation.	1.43	"	100
28	" "	J. D. Loucks	" " "	Irrigation & Agricultural.	5.50	"	385
28	" "	A. R. Hammontree	" " "	Irrigation.	.57	"	40
28	" "	H. D. Perkins	" " "	Domestic & Irrigation.	1.29	"	90
32	Peralta	P. L. McKee	1889	Irrigation.	.43	318.05	30
44	Cross & Cruse Creek and Last Chance Consolidated	S. J. Jennings	Aug. '92	"	1.71	378.57	120
44	Same as above.	Abraham Zullig	" "	"	.57	"	40
44	" "	John F. Lewis	" "	Domestic & Irrigation.	.71	"	50
44	" "	Theresa Gerdel	" "	Irrigation.	.57	"	40
44	" "	Robert F. Long	" "	"	.71	"	50
44	" "	James H. Kemp	" "	"	1.59	"	110

WATER DIVISION NO. 3, Fremont County.

Squaw Creek (Tributary of Baldwin Creek).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Togg	Charles E Togg	Spring '74	Irrigation.	1.00		70
2	Irwin	James Irwin	1875	Stock, Domestic & Irrigation.	1.90	1.00	120
3	Atkinson	Robert Barnaby	Before '77	Irrigation.	.29	2.90	20
4	Lone Star, West	Curles S. Appleby	Spring '80	"	.57	3.19	40
5	Huddlestun	Abraham Huddlestun	June '83	Irrigation & Domestic.	.25	3.76	14
6	Lynch	James Lynch	1885	Irrigation.	.04	4.01	3
6	Hallam	John G. Hallam	"	Stock, Domestic & Irrigation.	.80	"	50
7	West Squaw Creek	Sarah Hornecker	April 14 '88	Irrigation.	.01	4.85	1
8	Lyon	Abraham Huddlestun	March '92	"	.14	4.86	10
9	Lone Star, East	Curles S. Appleby	Spring '92	"	.29	5.00	20
10	East Squaw Creek	James Lynch	1892	"	.18	5.29	12.5

WATER DIVISION NO. 1, Carbon County.

Separation Creek and Tributaries.

1	Sweeney	Robert Taylor	Fall '82	Stock, Irrigation.	1.80		120
2	Jost	" "	1882	Irrigation.	1.14	1.80	80
3	P. Anderson	Patrick Anderson	April '83	Stock, Domestic & Irrigation	1.50	2.94	100
4	Taylor Pipe Line	Robert Taylor	Spring '85	Stock, Domestic & Irrigation.	1.80	4.44	120
5	Daley No. 1	Willliam Daley	Apr 1 '86	Irrigation.	2.65	6.24	180
5	" " 2	" "	" " "	Stock, Irrigation.	1.60	"	110
6	Separation	Patrick Anderson	May 1 '87	Irrigation		10.49	
7	Larson	James Larson	June 5 '89	Irrigation, Stock.	.30	"	20

WATER DIVISION NO. 3, Fremont County.

Popo Agie River and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Anderson No. 1	Peter Anderson	1873	Irrigation.	71		50
2	Barnaby	William F. Chalmers	Spring '74	"	1.00	.71	70
3	Hornecker	Ernest T. Hornecker	June 15 '74	"	.91	1.71	67
3	"	John M Hornecker	" " "	"	1.00	"	70
4	Olson	William Madden	1874	Stock, Domestic & Irrigation.	1.75	3.62	100
5	Patten & Jones	James I. Patten	May '75	Stock, Domestic & Irrigation.	1 00	5.37	50
5	" "	David J. Jones	" "	Irrigation.	.11	"	8
5	" "	William Boyd	" "	"	.43	"	30
5	" "	S. Conant Parks	" "	Stock, Irrigation.	.57	"	39.05
6	Nickerson	Herman G. Nickerson	Spring '75	Irrigation.	1.21	7.48	85
6	Trimble	Clifton P. Trimble	" "	Domestic & Irrigation.	1.20	"	80
7	Stringfield	Benjamin F. Lowe	June '75	Stock, Domestic & Irrigation.	.20	9.89	6
8	E. Coffey	Eugene Amoretti	Summer'75	Irrigation.	.29	10.09	20
9	Baldwin	Jacob S. Meyer	1875	"	1.14	10.38	80
10	Plat	Peter Anderson	Spring '76	"	.40	11.52	28
11	Jones, Warnock & Rebidow	Leonard P. Hudson	1877	"	.61	11.92	43
11	" " "	Abraham Rebidow	"	Stock, Domestic & Irrigation.	1.30	"	80
11	" " "	James McGinnis	"	Stock, Domestic & Irrigation.	1.55	"	95
12	Last	James Forrest	Spring '78	Stock, Domestic & Irrigation.	.50	15.38	25
13	Barnaby	Robert Barnaby	June 1 '78	Irrigation.	1.14	15.88	80

WATER DIVISION NO. 3, Fremont County.

Big Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
14	Meiggs	Thomas R. Beason	1878	Stock, Domestic & Irrigation	.05	17.02	125-242
14	"	James Irwin	"	Stock, Domestic & Irrigation.	.05	"	125-363
14	Farlow	Jules Lamoreux	"	Irrigation.	2.00	"	140
15	McGregor	Boyd & Lowe	Summer '78	Stock, Domestic & Irrigation.	.40	19.12	25
16	Chalmers & Togg	Charles E. Togg	Spring '79	Irrigation.	1.29	19.52	90
16	" "	Edward Farthing	" "	"	.36	"	25
16	" "	William T. Chalmers	" "	"	.50	"	35
17	Cemetery	Cornelius W. Crowley	June 20 '79	Stock, Irrigation.	.45	21.67	20
17	"	Josephine E. Baldwin	" " "	" "	1.25	"	85
17	"	Jules Lamoreux	" " "	Irrigation.	2.86	"	200
17	"	Wilbert Iiams	" " "	Stock, Domestic & Irrigation.	1.65	"	95
17	"	James K. Moore	" " "	Stock, Irrigation.	.70	"	40
17	"	Joseph M. Welch	" " "	Stock, Domestic & Irrigation.	1.00	"	50
18	Concrete	Ervin F. Cheney	Summer '79	Stock, Domestic & Irrigation.	.10	29.58	1
19	Patten & Crowley	Cornelius W. Crowley	Before '80	Stock, Domestic & Irrigation.	.24	29.68	15
19	" "	James I. Patten	" "	Irrigation.	.57	"	40
19	West End	" " "	" "	"	.14	"	10
20	Barnaby	" " "	Spring '80	"	.71	30.63	50
21	"	William T. Chalmers	1880	"	.60	31.34	42
22	Anderson No. 2	Peter Anderson	Summer '81	"	1.07	31.94	75

WATER DIVISION NO. 3, Fremont County.

Big Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second	Acres Irrigated.
23	Meadow	Jacob S. Meyer	1881	Irrigation.	.50	33.01	35
23	"	Lander Poor Farm	"	"	.29	"	20
23	Island	Jacob S. Meyer	"	"	.29	"	20
23	Cottonwood	" " "	"	"	.21	"	15
23	Sam Jones	" " "	"	"	.86	"	60
24	Nicol	Frank Nicol	March '82	Stock, Irrigation.	.50	35.16	30
24	"	Lander Experiment Farm	" "	Irrigation.	.21	"	15
25	Snavely	Solomon C. Snavely	Spring '82	Stock, Irrigation.	1.10	35.87	75
25	"	Thomas Snavely	" "	Irrigation	1.14	"	80
26	Outside	William Madden	Spring '84	"	.36	38.11	25
26	Jones	David Jones	" "	"	.46	"	32
27	Meiggs	Josephine E. Baldwin	April 1 '85	Stock, Domestic, & Irrigation.	.45	38.93	20
28	Nicol & Meyer	Frank Nicol	May 4 '85	Irrigation.	.71	39.38	50
28	" "	Jacob S. Meyer	" " "	Stock, Irrigation.	2.00	"	120
28	" "	Arthur T. Scott	" " "	Domestic & Irrigation.	.20	"	12
28	" "	Lander Experiment Farm	" " "	Irrigation, Stock.	1.30	"	90
28	Dutch Flat	Thomas J. Mortimore	" " "	Irrigation	.09	"	6
28	" "	Ellis E. Adams	" " "	"	.17	"	12
28	" "	Cornelius W. Crowley	" " "	Stock, Irrigation.	1.00	"	60
28	" "	Louis Poire	" " "	Stock, Domestic & Irrigation.	5.90	"	440
28	" "	Benjamin Robinson	" " "	Stock, Domestic & Irrigation.	2.00	"	120
28	" "	Henry Gorey	" " "	Irrigation, Stock & Domestic.	.40	"	16

WATER DIVISION NO. 3, Fremont County.

Big Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
28	Dutch Flat	John B. Cyphers (Estate)	May 4 '85	Stock, Domestic, & Irrigation.	1.55	39.38	100
28	" "	Wilbert Iiams	" " "	Irrigation.	57	"	40
28	" "	Samuel Iiams	" " "	Stock, Irrigation.	1.70	"	80
28	" "	John W. Jeffrey	" " "	Irrigation, Stock & Domestic.	.40	"	25
29	West End	John E. Bruce	May 15 '85	Domestic & Irrigation.	.20	57 37	7
30	Forrest	James Forrest	Spring '85	Stock, Irrigation.	.75	57 57	45
31	Baldwin	Ellis E. Adams	Nov. 13 '85	Irrigation	.20	58.32	14
31	"	George L. Baldwin and Mary Baldwin	" " "	Stock, Irrigation.	4.10	"	270
31	"	James H. Gorey	" " "	Domestic & Irrigation.	.50	"	24
31	"	Peter T. Peralta	" " "	Stock. Irrigation.	1.70	"	100
32	Cemetery	Joseph Welch	1885	Irrigation.	.36	64.82	25
33	"	Samuel Iiams	Spring '86	"	.71	65 18	50
34	"	James T. Beebe	Summer "	Stock, Domestic & Irrigation.	2.15	65.89	140
34	Meiggs	Eliza Briggs	Fall '86	Domestic & Irrigation.	.05	68 04	1/3
35	Swale	Peter Anderson	Spring '87	Irrigation.	.10	68.09	7
36	Barn	" "	Summer '87	"	.11	68.19	8
36	"	Herman G. Nickerson	" "	"	.07	"	5
37	Patten & Jones	William Madden	Sept. 25 '87	"	.29	68 37	20
38	Baltrum & Pitts } Baldwin through } Dutch Flat	Alexander P. Baltrum	" " "	"	.59	68 66	41

WATER DIVISION NO. 3, Fremont County.

Big Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
38	Baltrum & Pitts through Baldwin Dutch Flat	Elijah H. Pitts	Sept. 25'87	Irrigation.	.56	68.66	39
39	Snavely	Andrew J. Snavely	1887	"	.21	69.81	85
39	Cemetery	John W. Chittim	"	Stock, Irrigation.	.65	"	38
40	Mill	Lander Roller Milling Company	Aug. 10 '88	Mechanical.	40.70	71.67	
41	Chalmers & Togg	James Irwin	1888	Stock, Domestic, & Irrigation.	1.95	112.37	120
41		Fremont County Fair and Agricultural Association.	"	Stock, Domestic & Irrigation.	.86	"	50
42	Amoretti	Eugene Amoretti	May '89	Stock, Domestic & Irrigation.	.30	115 18	10
43	Snavely	Solomon C. Snavely	1889	Irrigation	.57	115.48	40
44	Meiggs	Samuel Osborn	Spring '90	"	.01	116.05	125-242
44	Farthing	Edward Farthing	" "	"	.50	"	35
45	Old Baldwin	Thomas Mortimore	1890	"	.07	116 56	5
46	E. Coffey or Norton No. 3	John T. Norton	May '91	Irrigation, Stock & Domestic.	.05	116.61	3.5
46	Parks	S. Conant Parks	" "	Stock, Domestic & Irrigation	.10	"	125-363
47	Island	George A. Rogers	March '92	Irrigation.	1.77	116 76	124
48	Barn	Sarah T. Knott	Summer'92	"	.07	118.53	5
48	Baldwin	Jacob S. Meyer	" "	"	.21	"	15
49	Dickinson	Margaret Dickinson	Summer'93	Domestic & Irrigation.	.10	118.81	2

WATER DIVISION NO. 3, Fremont County.

Twin Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Tweed	William Tweed	1873	Irrigation.	.47		33
2	Skull Gulch	Edward Stetzner	1875	"	.43	.47	30
3	Red Bluffs No. 2	Gardner S. Mills	1879	Stock, Domestic & Irrigation.	.45	.90	20
4	Tweed (Red Canon)	Phillip Wisser	Spring '81	Stock, Domestic & Irrigation.	1.15	1.35	60
5	David Tweed	Caroline Kime	1881	Stock, Domestic & Irrigation.	1.90	2.50	100
6	Red Bluffs No. 1	Gardner S. Mills	1884	Stock, Domestic & Irrigation.	.95	4.40	55
7	Big Bend	Alfred L. Bruce	July '85	Irrigation.	.14	5.35	10
8	Bircumshaw	John Bircumshaw	1885	"	.04	5.49	3
9	Crittenden	Frederick E. Crittenden	May '86	"	.26	5.53	18
10	Bircumshaw	John Bircumshaw	Feb 2 '87	"	.33	5.79	20
11	Sub-irrigated by Dam	Urban P. Davison	Mar. 20 '87	"	.03	6 12	2
12	Sheep Creek	William Schlichting	Sept. 10, '88	"	.09	6.15	6
13	Schlichting	" "	Sept. 11, '87	"	.28	6.24	19.5

Red Canon Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Home	Joseph Wagner	May '87	Domestic & Irrigation	.06		.75
2	Red Canon	John M. Weisbrod	Spring '87	Irrigation.	.03	.06	2
3	Wagner No. 2	Joseph Wagner	Sept. 9 '90	"	.29	.09	20

WATER DIVISION NO. 3, Fremont County.

Willow Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Rochester	John M. Reid	May 1 '73	Irrigation, Stock.	1.75		105
2	Himmelsbach No. 2, North	Joseph Himmelsbach	Spring '74	Irrigation.	.43	1.75	30
3	" " 1, "	" "	Spring '75	"	1.72	2.18	120
3	" " 3, "	" "	" "	"			
3	" " 1, South	" "	" "	"			
3	" " 2, "	" "	" "	"			
3	" " 3, "	" "	" "	"			
4	Reid	John M. Reid	May 1 '83	Stock, Domestic & Irrigation.	.80	3.90	36
5	Willow Creek (Clark)	William F. Bryant	Spring '86	Irrigation.	.26	4.70	18
6	Spring	Joseph Himmelsbach	" '87	Stock.	.10	4.96	
7	Willow Creek	John M. Reid	May 15 '88	Stock, Irrigation.	.80	5.06	40
8	De Wolf	Henry D. De Wolf	Spring '88	Irrigation.	.01	5.86	.25

Deep Creek (Tributary Popo Agie River).

1	Deep Creek No. 1	William Tweed	Spring '70	Irrigation.	.21		15
2	" " " 2	" "	Spring '71	"	.33	.21	23

Barrett Creek (Tributary of Popo Agie River).

1	Wagner No. 1	Joseph Wagner	Spring '78	Irrigation.	.36		25

Crooked Creek (Tributary Middle Fork Popo Agie).

1	Basin	Carrie B. Meyer	Aug. 20 '87	Irrigation.	2.86		200

WATER DIVISION NO. 3, Fremont County.

Hornecker Creek (Tributary Middle Fork Popo Agie).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Poor Farm	State Poor Farm	Apr. 25 '70	Irrigation.	1.43		100
3	Red Buttes	Ernest F. Hornecker	June '75	"	.06	1.64	4
2	Swamp	State Poor Farm	Spring '75	"	.21	1 43	15
4	Flat	Ernest F. Hornecker	Spring '78	"	.14	1.70	10
5	Grimmett	John Grimmett	June '78	Stock, Domestic & Irrigation.	1 80	1.84	115
6	Sandstone	James W. O'Neal	Oct '89	Stock, Domestic & Irrigation.	.45	3.64	22
6	"	Edward Farthing	" "	Irrigation.	.11	"	8
6	"	Thomas Cook	" "	"	.21	"	15
6	"	William F. Chalmers	" "	"	.20	"	14
6	"	Albert Hornecker	" "	"	.60	"	42
6	"	John G. Hallam	" "	"	.06	"	4 5
7	Little Canon	John M. Hornecker	1890	Stock, Irrigation.	.16	5.27	10
7	Garden	" "	"	" "	.08	"	4
7	Jolliff	Sarah Hornecker	"	" "	.01	"	.5

Little Popo Agie and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Faris	Joseph Faris	May 8 '71	Stock, Domestic & Irrigation.	1.00		58
2	Garden	Edward Young	May 15 '74	Domestic & Irrigation.	.50	1.00	30
3	Meadow	" "	June 15 '76	Irrigation.	.57	1.50	40
4	Rogers & Gregg	Micajah Gregg	March '80	Stock, Domestic & Irrigation.	3.40	2.07	215

WATER DIVISION NO. 3, Fremont County.

Little Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second	Acres Irrigated.
4	Rogers & Gregg	George D. Rogers	March '80	Stock, Domestic & Irrigation.	1.75	2.07	100
4	" "	John Rogers	" "	Irrigation & Domestic.	1.50	"	100
4	" "	George A. Rogers	" "	Stock, Domestic & Irrigation.	70	"	30.60
5	Baltrum	Alexander P. Baltrum	Spring '80	Irrigation.	1.10	9.42	77
6	Lyons	Robert H. Hall	March 1 '81	Stock, Domestic & Irrigation.	2.40	10.52	145
6	"	John Gillis	" " "	Stock, Domestic & Irrigation.	1.90	"	75
6	"	James E. Gillis	" " "	Stock, Domestic & Irrigation.	1.35	"	80
7	Trosper	William B. Trosper	Spring '81	Irrigation.	.29	16.17	20
8	Werlen	John Werlen	Fall '81	"	1.06	16.46	74
9	Werlen & Kime	James Kime	Fall '83	Stock, Domestic & Irrigation.	1.50	17.52	75
9	" "	John Werlen	" "	Domestic & Irrigation.	.40	"	23
10	Bryant	William T. Bryant	Spring '84	Irrigation.	57	19.42	40
11	Edwards { Hall, Trimble, Gregg & Lyons. }	Amelia S. Hall	March 1 '85	Stock, Domestic & Irrigation.	1.45	19.99	80
11	"	Micajah D. Gregg	" " "	Irrigation.	.14	"	10
11	"	Clifton P. Trimble	March '85	"	.57	"	40
12	Trosper	William B. Trosper	Spring '85	"	.86	22.15	60
12	Rogers & Gregg	Clifton P. Trimble	" "	"	.29	"	20
12	" "	Amelia S. Hall	" "	"	.50	"	35

WATER DIVISION NO. 3, Fremont County.

Little Popo Agie River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
13	Shedd	Joseph F. Shedd	April 10 '86	Irrigation.	1.71	23.80	120
13	"	Robert H. Hall	" " "	Stock, Irrigation.	3.00	"	245
13	"	John Gillis	" " "	Irrigation.	.29	"	20
14	Casto	Isaac F. Casto	Spring '85	"	.24	28.80	17
15	Casto & Kime	" "	Fall '86	"	.29	29.04	20
16	Rogers & Gregg	Geo. A. Rogers	1887	"	.29	29.33	20
17	Lamon	Joseph Lamon	Sept. 1 '88	"	.14	29.62	10
18	Lyons	John Gillis	" '92	"	.97	29.76	65

Commissary Springs (Tributary of Twin Creek).

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Huftile	William Huftile	1886	Stock, Domestic & Irrigation.	.45		17

Baldwin Creek.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
	Ranney	Edward L. Ranney	Spring '93	Irrigation.	2.30		160

North Fork Popo Agie River.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
28	Brown Jug	Riley Standish	July 1 '93	Irrigation.	.66		40

Popo Agie River and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
	Ecoffey	Fremont County Court House	Spring '93		.10		3.5

WATER DIVISION NO. 1, Laramie County.

Rawhide Creek and Tributaries

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Mays No. 1	Matilda Mays	Summer '80	Irrigation.	.13		8
2	W. H. No. 1	Edwin Patrick	Fall '81	"	1.15	.13	80
2	W. H. No. 2	" "	" "	"	1.15	"	80
3	L. Z.	Thomas H. Williams, David A. Bishop and Jacob M. Tompkins, Trustees for Bondholders of Luke Voorhees Cattle Co.	May 1 '83	"	15.71	2.43	1.100
4	Bartlett No. 1	Chas. Coffee	Dec. 1 '83	"	4.57	18.14	320
5	Bartlett No. 2	" "	May '84	"	4.57	22.71	320
6	Rinker	Chas. F. Coffee	July 3 '86	"	2.86	27.28	200
7	Patrick & Smith	" " "	Sept. 4 '87	"	1.43	30.14	100
7	" "	Edwin Patrick	" " "	"	4.57	"	320
8	Reynolds	Wm. Reynolds	" "	"	.43	36.14	30
9	Mays No. 2	Matilda Mays	Summer '90	"	.23	36.57	16
9	Mays No. 3	" "	" "	"	.31	36.80	22
10	Snow	John T. Snow	Dec. 23 '91	"	2.93	37.11	205

WATER DIVISION NO. 1, Albany County.

Spring or Alkali Creek.

1	Hardman Alkali	James Hardman	April '77	Stock, Irrigation.	1.00		70
2	Spring Creek	Ervin J. Boyd	Aug. 26 '89	" "	1.66	1.00	116

WATER DIVISION NO. 2, Converse County.

Hat Creek and Tributaries.

1	Storie No. 1	Mary L. Storie	April 11 '91	Irrigation.	4.57		320
1	Storie No. 2	" "	" " "		3.35		245

WATER DIVISION NO. 1, Laramie County.

Little Laramie River and Tributaries

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
3	Judson, Sutphin & Co., Nos. 7, 4 & 5	Judson, Sutphin & Co.	May 5 '92	Irrigation.	5.21	10.40	365
5	Judson, Sutphin & Co., Nos. 1, 2, 8 & 9	" " "	" " "	"	6.57	19.21	460
5	Jones	Christopher H. Jones	" " "	"	1.64	"	115

The three Certificates above abstracted were issued to correct errors in the ones originally issued.

WATER DIVISION NO. 2, Crook County.

Redwater Creek and Tributaries.

1	Moorcroft	Alexander Moorcroft	June '77	Irrigation.	.14		10
2	Folsom & Ripley	Leland H. Ripley	June '81	"	2.86	.14	200
2	" "	Smith Folsom	" "	"	.36	3.00	25
3	Murray or Jan Moeller	Hans Falk	Nov. 1 '81	Irrigation & Domestic.	1.43	3.36	100
4	Woodburn	William W. Woodburn	Spring '82	Irrigation.	.43	4.79	30
5	Redwater or Jan Moeller	Jan Moeller	Oct. 1 '82	"	1.71	5.22	120
6	Robert Gunn	Robert Gunn	May 5 '84	"	.09	6.93	6
7	Cornell No. 1	William Schlovedt	Oct. 9 '86	"	.71	7.02	50
8	Medicine Spring Ditch & Reservoir	" "	May 5 '89	Irrigation, Stock & Domestic.	.86	7.73	60
9	Dickenson	George W. Thatcher	June '89	Irrigation & Domestic	.71	8.59	50
10	Bellivean	Joseph Bellivean	Nov. '89	Irrigation.	.04	9.30	3
11	Beulah Flouring Mill	Alexander Moorcroft	Mar. '90	Milling.	20.88	9 34	
12	Moorcroft	" "	1892	Irrigation.	2.00	30.22	140

WATER DIVISION NO. 2, Weston County.

The Hunyadi Mineral Springs.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Hunyadi Canal The Hunyadi Mineral Springs Sanitarium Association Limited	M. B. Camplin, Secretary.		Domestic & Bathing.	Carrying capacity.		

Oil Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Oil Creek	Colin Hunter	Mar. 25 '89	Irrigation.	4.57		320
2	Freel	Zedick W. Freel	1893	Domestic & Irrigation.	.43	4.57	30

WATER DIVISION NO. 1, Laramie County.

Muddy Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Pioneer No. 1	G. H. Gilland, Amanda Martin	May 1 '71	Irrigation.	1.71		120
2	A. Martin No. 1	" " " "	May '74	"	1.43	1.71	100
3	Roland	Kate Roland	Summer '74	"	.71	3.14	50
4	Harrington	Henry Harrington	July 1 '77	"	1.14	3.85	80
5	Thayer	A. Wilkenson	Apr 15 '79	Irrigation, Stock.	1.05	4.99	73.6
6	Gross No. 1	Chas. J. Gross	May 1 '84	Irrigation.	1.36	6.04	95
7	Dolan	William Dolan	Oct. 15 '85	Stock, Domestic & Irrigation.	1.47	7.40	102.5
8	Gross No. 2	Chas. J. Gross	Nov. 15 '85	Irrigation.	.57	8.87	40
9	A. Martin No. 3	Amanda Martin	May '87	"	.21	9.44	15
9	" " " 2	" "	" "	"	.21	9.65	15
10	Reuben Martin	H. Wilkenson	March 1 '94	Stock, Irrigation.	.31	9.86	22
11	Rugg	" "	Not used, since 1886.	" "	.07	10.17	5

WATER DIVISION NO. 2, Converse County.

Niobrara or Running Water Creek and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	E. B. Wilson	Eugene B. Wilson	May 1 '81	Stock, Irrigation.	5.85		900
2	L. L. No. 2	Luke Voorhees Cattle Co.	Summer'81	Irrigation.	.02	5.85	1.5
3	Van Tassel No. 4	R. S. Van Tassel	Apr. 8 '82	Stock, Irrigation.	1.57	5.87	100
4	" " " 5	" " "	April 12 '82	" "	1.00	7.44	70
5	Jenks Dams	George D. Jenks	Summer'83	Irrigation.	3.57	8.44	250
6	Snyder	Henry C. Snyder	Season '84	"	.07	12.01	5
7	Van Tassel No. 1	R. S. Van Tassel	April 5 '85	Stock, Irrigation.	1.71	12.08	120
8	" " " 2	" " "	April 10 '85	" "	.57	13.79	40
9	" " " 3	" " "	April 20 '85	" "	1.14	14.36	80
10	Running Water No. 1	Addison J. Spaugh	May 5 '85	Irrigation.	.07	15.50	5
10	" " " 2	" " "	" " "	"	1.43	15.57	100
10	Rock Draw	" " "	" " "	"	1.14	17.00	80
11	Niobrara No. 1	Niobrara Ditch Co.	May '86	"	.35	18.14	25
12	Baker No. 1	Nat Baker	Season '87	Stock, Irrigation.	1.00	18.49	70
12	" " 2	" "	" "	" "	.43	19.49	30
13	L. L. No. 1	Luke Voorhees Cattle Co.	Summer'87	Irrigation.	.57	19.92	40
14	Johnson	Ellis Johnson	1887	"	.17	20.49	12
15	Dog Town Nos. 1, 2 & 3	Jos. S. Hull, A. J. Williams	1891	"	2.28	20.66	160
16	Emma	Frank A. Watt	July '91	Irrigation, Stock.	.07	22.94	5

WATER DIVISION NO. 2, Crook County,

Belle Fourche River and Tributaries.

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
1	Loomis & Andrews	Loomis & Andrews	July '85	Stock, Irrigation.	2.30		
2	——Decreed——				.75	2.30	
3	Millar	Moorcroft Ranch Co.	Aug. 10 '86	Irrigation.	.86	3.05	
4	Benton Creek	Julius Hewes	Oct. '86	"	.57	3.91	

WATER DIVISION NO. 2, Crook County.

Belle Fourche River and Tributaries—*Continued.*

Priority No.	Name of Ditch.	Name of Appropriator.	Date of Priority.	Use to which Applied.	Amount of Appropriation. Cubic feet per second.	Amount previously Appropriated. Cubic feet per second.	Acres Irrigated.
5	Inyan Kara	W. H. Nefsy	Jan. 10 '87	Stock.	.14	4.48	
5	" "	Daniel Nefsy	" " "	"	.14	4.62	
6	Ryan & Baird	John C Ryan	April 10 '87	Irrigation.	2.86	4.76	
7	——Decreed——				.81	7.62	
8	Benton Creek	Benjamin F. Shober	Aug. 28 '87	"	57	8.43	
9	Whitcomb	Kate Whitcomb	Sept. 8 '87	"	6.86	9.00	
10	Spring Creek	Albert Hoge	Oct. 15 '87	"	.43	15.86	
11	Lake Creek & Burk	Edmund L. Burk	Oct. '87	"	2.30	16 29	
12	Lower Shober	Benjamin F. Shober	April '88	"	.21	18.59	
13	Rand	Calvin L. Rand	April 27' 88	Irrigation & Domestic.	1.43	18.80	
13	"	John R. Rand	" " "	Domestic & Irrigation.	.40	20.23	
14	Millar Creek	Miss S. H. Carlile Kent	" "	Irrigation.	3.14	20.63	
15	——Decreed——				.10	23.77	
16	Bender	David Bender	Jan. 26 '89	"	.07	23.87	5
16	"	A. S. Bender	" " "	"	.04	23.94	3
17	Driskill	W. S. Driskill	Aug. 13 '89	"	2.86	23.98	200
18	Huston Creek or Gassett	Walter Gassett	Dec. 20 '89	"	.93	26.84	65
19	Shober & Culver	Benjamin F. Shober	Mar. 8 '90	"	.64	27.77	45
19	" "	Chas H. Culver	" " "	"	.86	28.41	60
20	Canon Prairie	Fred W. Bock	Nov. '90	Stock, Domestic, & Irrigation.	.21	29.27	15
21	Morris	John S. Morris	April '91	Irrigation.	.11	29.48	8
21	Mason	Samuel W. Mason	" "	"	.07	29 59	5
22	Frederick Schmidt	Frederick Schmidt	Dec. 17, '91	Domestic & Irrigation.	.21	29.66	15

INDEX.

ILLUSTRATIONS.

Clear Creek Measuring Flume .... Frontispiece.
Map, Water Division No. 1 10
Map, Water Division No. 2 11
Map, Water Division No. 3 12
Map, Water Division No. 4 13
Map Showing Progress of Surveys 20
Sand Creek, Crook Co., Shell Creek, Big Horn Co. 60
Map, Clear Creek and Tributaries 68
Map, Prairie Dog Creek 68
Mountain Lakes 72
Gauging Flume 76
Fremont Lake and Jackson's Lake 112
Views on Massacre Hill 120
Map, Projected Canals from North Platte River 132
Map, Projected and Completed Canals from Laramie River 136
Map, Projected Canals from Shoshone and Grey Bull Rivers 140
Sites for Dams 144
Shoshone and Grey Bull Rivers 148
Map, Projected Canals from Green River 152
Cross Section of North Platte River .... Appendix, xxviii
Diagram of Discharge of Laramie River xxviii
Cross Section of Laramie River xxix
Diagram, Discharge of Green River xxx
Diagram, Discharge of North Platte River .... xxxi, xxxii
Diagram, Discharge of Clear Creek xxxiii
Diagram, Discharge of Clear Creek Measuring Flume xxxiv

INDEX.

LETTER OF TRANSMITTAL 3

LIST OF OFFICERS IN CHARGE OF PUBLIC WATERS OF THE STATE 5
- Board of Control 5
- Water Division No. 1 5
- Water Division No. 2 5
- Water Division No. 3 6
- Water Division No. 4 6

BOUNDARIES OF WATER DISTRICTS 7
- Water Division No. 1 7
- Water Division No. 2 8
- Water Division No. 3 9
- Water Division No. 4 9

INTRODUCTION 14
- Review of Progress during past four years 14
- Summary of Certificates of Appropriation 18
- Extract from Kinney on Irrigation 20

EXTENSION OF CULTIVATED AREA 22
- Sheridan County 23
- Upper Platte Valley 23
- Salt River Valley 24
- Wheatland Colony 25

NEEDED LAND LAWS 27
- How ditches should be built 29
- Donation of one million acres 29
- Grazing Land 30

LIMITATION OF RIGHTS TO WATER 33
- Law of appropriation 35

State legislation 37
Court decisions 39
The nature of vested rights 39
Action of Board in accord with experience elsewhere 46

REVIEW OF WORK IN 1893 AND 1894 49
Permits for new ditches 49
Blank application for permit (see also 227) 51
Character of proposed works 55
Miscellaneous records 56
Applications for reservoir permits 58
Fees for recording statements 59

FIELD WORK, 1893 60
Survey of ditches along Clear Creek and tributaries 61
Stream gaugings 63
Character of ditches surveyed 65
Surveys in Crook and Weston Counties 69

FIELD WORK, 1894 73
Gauging of ditches 74
Irrigation, Salt River Valley 102
Duty of water 104
Report of M. C. MacFarlane 108

STATE BOARD OF CONTROL 122
Changes in membership 123
Appropriation of medicinal springs 124
Separate certificates of appropriation 126
Time of holding contests 126

SOME OF THE UNUSED LAND AND WASTED WATER 128
North Platte River 129
Goshen Hole 131
Upper Platte Valley 132
Laramie River 134
Big Horn River 136
Grey Bull River 141
Shoshone River 142
Green River 146
Black's Fork 151
Streams in Division No. 2 153

THE NEED OF MORE FARMERS 155
Shipments of Farm Products 157
Retail prices of Farm Products 160

SPECIAL COMMISSION TO SELECT STATE LAND 161

RECOMMENDATIONS 171

REPORTS 173
  Of J. A. Johnston, Supt. Water Division No. 1 173
  " " " Secretary Board of Control 177
  " Jack Dow, Supt. Water Division No. 2 179
  " N. H. Brown, Supt. Water Division No. 3 180
  " A. D. Chamberlin, Supt. Water Division No. 4 180

OPINIONS OF ATTORNEY GENERAL 185
  Water rights on Military Reservation 185
  Correction of mistakes in evidence 185
  Appropriation of water on Indian Reservation 187
  Application for enlargement must precede appropriation 194
  Authority of Engineer to extend time for completing appropriation 197

COMPILED WATER LAWS 201

CONSTITUTION OF WYOMING—
  Water property of State 201
  Board of Control, Appropriation, Water Divisions, State Engineer 202
  Rights of Municipal Corporations 202

REVISED STATUTES, 1887.
  Rights of way for ditches and canals 203
  Ditches to be bridged 205
  Destroying water improvements 207
  Water commissioners to prevent waste of water 208

SESSION LAWS OF WYOMING, 1888.
  Limitations on appropriations of water 209
  Surplus water shall be sold 209
  County commissioners shall fix rates 209

SESSION LAWS OF WYOMING, 1893.
  Irrigation companies, assessment of capital stock 210

SESSION LAWS OF WYOMING, 1890-91.
  Supervision of water 211
  Water divisions 211
  Duties of State Engineer 212
  Division Superintendents 214
  Water Commissioners 215
  Board of Control 216
  Determination of priorities 217
  Contests 220
  Measurement of streams and ditches by the State Engineer 221
  Certificate of appropriation 222

Procedure in appeals from the Board 223
Applications for right to appropriate water 227
Map to be filed 230
Certificate to appropriator 232
Duties of Water Commissioners 233
Approval of dams and reservoirs 237

SESSION LAWS OF WYOMING, 1895.

Fees to be charged by State Engineer 238
Re-hearing before Board of Control 239
Members of Board may administer oath 240
Fees of Board 240

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JAN 22 1919

Fifth Biennial Report

—OF THE—

STATE ENGINEER

—TO THE—

GOVERNOR OF WYOMING

—FOR THE—

Years 1899 and 1900.

CHEYENNE, WYO.
THE S. A. BRISTOL COMPANY, PRINTERS AND BOOKBINDERS
1901

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LETTER OF TRANSMITTAL.

Cheyenne, Wyoming, November 30th, 1900.

To the Honorable
DE FOREST RICHARDS,
Governor.

Sir:—As provided for in Section 107, Chapter VII, Revised Statutes of Wyoming, I have the honor to submit herewith a report of the work of this office for the two years ending November 30th, 1900, with such recommendations as, in my judgment, will increase the efficiency of the water laws and secure their better administration.

Yours very respectfully,
FRED BOND,
State Engineer.

TABLE OF CONTENTS.

Letter of Transmittal 5
List of Officers in Charge of Irrigation 9
Review of Work of Engineer's Office 11
Office Fees 12
Summary of Certificates Issued, 1899-1900 12
Incomplete Adjudication 13
Ditch Surveys on Owl Creek 14
Ditch Surveys on Grey Bull River 15
Ditch Surveys on Laramie River 16, 69
Reservoir Construction 17
Natural Reservoir Sites 19, 21, 23, 25, 54, 57, 60
Reservoirs in Conflict with Prior Rights 25
Opinion of Attorney General 27
Green River Basin 29
Water for Live Stock 33
Limitations in Appropriations as to Time 35
Impounding Stock Water 36
Under-Drainage of Irrigated Lands 36
Reclamation under the Carey Act 39
Water Right Decree by District Court 40
Stream Gaugings 31, 32, 33, 49, 53, 60
Table of Discharge 47
Grand Encampment River 49
Examination of Owl Creek Basin 50
Grey Bull River 55
Black's Fork Water Supply 59
Modification of Land Office Requirements 60
Selection of State Lands 63
Table of Acreage in Selections 64
Water Right Decision by the Supreme Court 66
Work of Board of Control 68
Recommendations 70
Report of Wm. M. Gilcrest, Superintendent Water Division No. 1 75
Report of F. S. Kellogg, Superintendent Water Division No. 2 . . . 80
Report of B. B. Morton, Superintendent Water Division No. 3 . . . 82
Acknowledgments 84
Table of Permits to Appropriate Water Issued 1899-1900 85
Table of Final Certificates 143
New Water Laws 165
Amendments to Water Laws now in Force 168

LIST OF ILLUSTRATIONS.

Upper Green River Lake .... *Frontispiece*
The Devil's Garden 14
Boulder Lake 18
Burnt Lake 20
New Fork Lake 23
Map of Fremont's Lake 22
North Piney Lake 25
Map of Willow Lake 24
Clear Fork Falls 29
Map of New Fork Lake 26
Middle Piney Lake 30
Map of North Piney Lake 28
Lower Green River Lake 32
Meter Guaging Station 36
Grading on the "Burlington" 38
Brush Creek 40
Grand Encampment River 49
Branding Cattle 50
Hereford Cow and Calf 50
Owl Creek Basin 51
Dam Site, Grey Bull River 55
Map of Reservoir Site, Grey Bull River 58
Black's Fork Canal 59
Ham's Fork 59
Grand Encampment Valley 60
Guaging Station at Guernsey 68
Guaging Station at Thermopolis 68
Reservoir Site on Grey Bull River 74
North Platte River at Bennett Mountain 74

LIST OF OFFICERS

IN CHARGE OF

IRRIGATION IN WYOMING.

Fred Bond .... State Engineer.
A. J. Parshall .... Assistant State Engineer.

DIVISION SUPERINTENDENTS.

W. M. Gilcrest, Superintendent of Water Division No. 1
and Secretary of the Board of Control, Cheyenne.
C. B. Holmes....... Sup't of Water Division No. 2, Sheridan.
B. B. Morton....... Sup't of Water Division No. 3, Ten Sleep.
O. A. Hamilton.. Sup't of Water Division No. 4, Rock Springs.

WATER COMMISSIONERS.

DIVISION NO. 1.

W. D. Pease.......... Commissioner District No. 1, Cheyenne.
George W. Snow..... Commissioner District No. 2, Little Bear.
J. L. Jordan.... Commissioner District No. 3, Iron Mountain.
Price Jacobs........... Commissioner District No. 4, Laramie.
C. H. Jones........... Commissioner District No. 5, Laramie.
W. H. Mead........ Commissioner District No. 6, Fort Steele.
Horace Nichols......... Commissioner District No. 7, Collins.
J. M. Calvert............ Commissioner District No. 8, Dixon.
J. W. Price............ Commissioner District No. 11, Casper.
Alva Dixon.......... Commissioner District No. 12, Rockdale.
D. A. Wucherer......... Commissioner District No. 14, Lusk.
S. A. Bishop......... Commissioner District No. 15, Douglas.
S. Slaymaker............ Commissioner District No. 16, Inez,

DIVISION NO. 2.

A. M. Nelson........Commissioner District No. 1, Newcastle.
E. E. Miller .... Commissioner District No. 2, Greub.
J. R. Hutton...........Commissioner District No. 3, Buffalo.
M. K. Wood..........Commissioner District No. 4, Sheridan.
C. J. Huntington.......Commissioner District No. 5, Dayton.
Adolphus Youkee.........Commissioner District No. 6, Slack.
John Pearson.........Commissioner District No. 7, Sundance.

DIVISION NO. 3.

A. P. Battrum..........Commissioner District No. 1, Lander.
L. P. Hudson..........Commissioner District No. 2, Lander.
C. E. Blonde...........Commissioner District No. 5, Embar.
C. E. Shaw..........Commissioner District No. 6, Red Bank.
F. S. Wood...............Commissioner District No. 8, Otto.

DIVISION NO. 4.

Chas. Rathburn......Commissioner District No. 1, Fontenelle.
John Shirk...........Commissioner District No. 3, Roberson.
W. H. Kennington.......Commissioner District No. 8, Afton.

REVIEW OF WORK

OF THE

ENGINEER'S OFFICE.

APPROPRIATION OF WATER.

The total number of appropriations of water made prior to the State laws and of record in the form of statements of claim is 3,649, made by 4,703 individuals and companies. The total number of permits issued since the enactment of the State water laws is 3,536; of these 601 are for enlargements or extensions of ditches previously constructed, the total number of individuals and companies interested in these appropriations under permits being 4,715.

The number of individuals and companies appropriating and using the State's waters on November 30th, 1,900, is 9,418. Nine hundred and eighty-five appropriations under permits have been perfected and 343 have been cancelled. Two hundred and seven applications for permits to construct reservoirs have been approved, seventy-seven of these having been issued during the past two years. During the year 1899 and to November 30th, 1900, 1,141 applications for permits have been approved and recorded, of which 927 were for original ditches and 214 were for enlargements, an increase of original applications over the two years previous of nearly fifty-two per cent., and in enlargements of over 30 per cent. Under the 927 original applications it is proposed to reclaim 507,156 acres at an estimated cost of $1,604,195, or an average of $3.16 per acre. Under the 214 enlargement permits 52,803 acres are to be reclaimed at a cost of $83,581, or $1.58 per acre.

Thirteen applications for stock, domestic and railway purposes involve an outlay of $20,715, and sixteen applications for mining and milling purposes, an expenditure of $109,850.

FEES.

This office has received the following fees since the law providing for fees went into effect in 1895:

1895	$ 673.90
1896	910.80
1897	1,089.55
1898	1,098.80
1899	1,465.70
1900 to November 30th	1,800.50
Total	$7,039.25

These fees were formerly available for the payment of clerical services in the Engineer's office, but in the session of 1899 this law was repealed. The consequent cutting down of the available funds for the use of this office has seriously crippled its usefulness, and has resulted in postponing many surveys for which there is urgent demand.

SUMMARY OF CERTIFICATES OF APPROPRIATION

Issued by the State Board of Control between November 30th, 1898, and November 30th, 1900.

Division No.	NAME OF STREAM	Total No. of Appropriators	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	North Spring Creek	16	67.47	4,730
1	Methodist Creek	2	2.27	160
1	Centennial Creek	4	6.48	455
1	South Spring Creek	26	60.55	4,072
1	East Branch of Spring Creek	2	11.35	760
1	Bates Creek	3	20.20	1,380
1	Brush Creek	1	6.86	480
1	Deer Creek	1	2.28	160
2	Cross Creek (Supplemental)	1		6,320
2	White Creek	1	.85	60
2	Jackson Creek	1	.01	1
2	Lytle Creek	1	3.40	210
2	Rapid Creek	1	1.07	75
2	Spring Creek	1	.04	3
2	South Red Water Creek	1	2.14	150
2	Seepage Water, Rock Creek	1	.28	20
2	Red Water Creek	1	.57	40
2	Spring Tributary Creek	1	.14	10
2	Sand Creek	1	1.14	80

SUMMARY.—*Concluded.*

Division No.	NAME OF STREAM	Total No. of Appropriators	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
2	Little Goose Creek	1	.50	35
2	Beaver Creek	1	3.14	220
2	Piney Creek	1	1.29	90
3	Wood River	26	28.96	2,027.1
3	Meeteetse Creek	8	10.06	704
3	Dick Creek	1	.91	64
3	Rawhide Creek	1	2.64	185
3	Renneberg Creek	1	.21	15
3	Piney Creek	2	1.00	70
3	Brokenback Creek	1	1.07	75
3	Ten Sleep Creek	3	2.31	162.5
3	Owl Creek	23	54.98	3,866
3	North Fork Creek	3	10.74	751
3	Grey Bull River	181	440.20	30,814.22
3	East Timber Creek	1	5.14	360
3	West Timber Creek	1	.50	35
3	Timber Creek	1	2.28	160
3	Franc's Fork Creek	1	8.33	583
3	Pickett Creek	1	.64	45
3	Rock Creek	3	14.03	983
3	Four Bear Creek	1	5.06	354
4	Salt River	5	5.84	405
4	Dry Creek	5	6.13	430
4	Crow Creek	2	1.42	100
4	Black's Fork	2	3.74	257
4	Spring Creek	3	3.09	215
4	Lost Creek	1	6.85	480
4	South Piney Creek	1	.78	55
4	Big Piney Creek	1	.71	50
4	Willow Creek	6	5.65	395
4	Swift Creek	15	18.97	1,398
4	Cottonwood Creek	3	4.63	325
4	Anderson Creek	1	.28	20
4	Birch Creek	1	2.28	160
4	La Barge Creek	1	2.67	187
4	Smith's Fork	4	4.81	338

ADJUDICATION NOT COMPLETE.

Surveys were made in 1899 of all the ditches diverting water from the Laramie River and tributaries, with the exception of Little Laramie River and Soldier Creek. The proof of

365 individuals and companies has been taken, submitted to public inspection and will probably be acted upon by the Board at its next meeting. The area of land reclaimed is 184,688 acres.

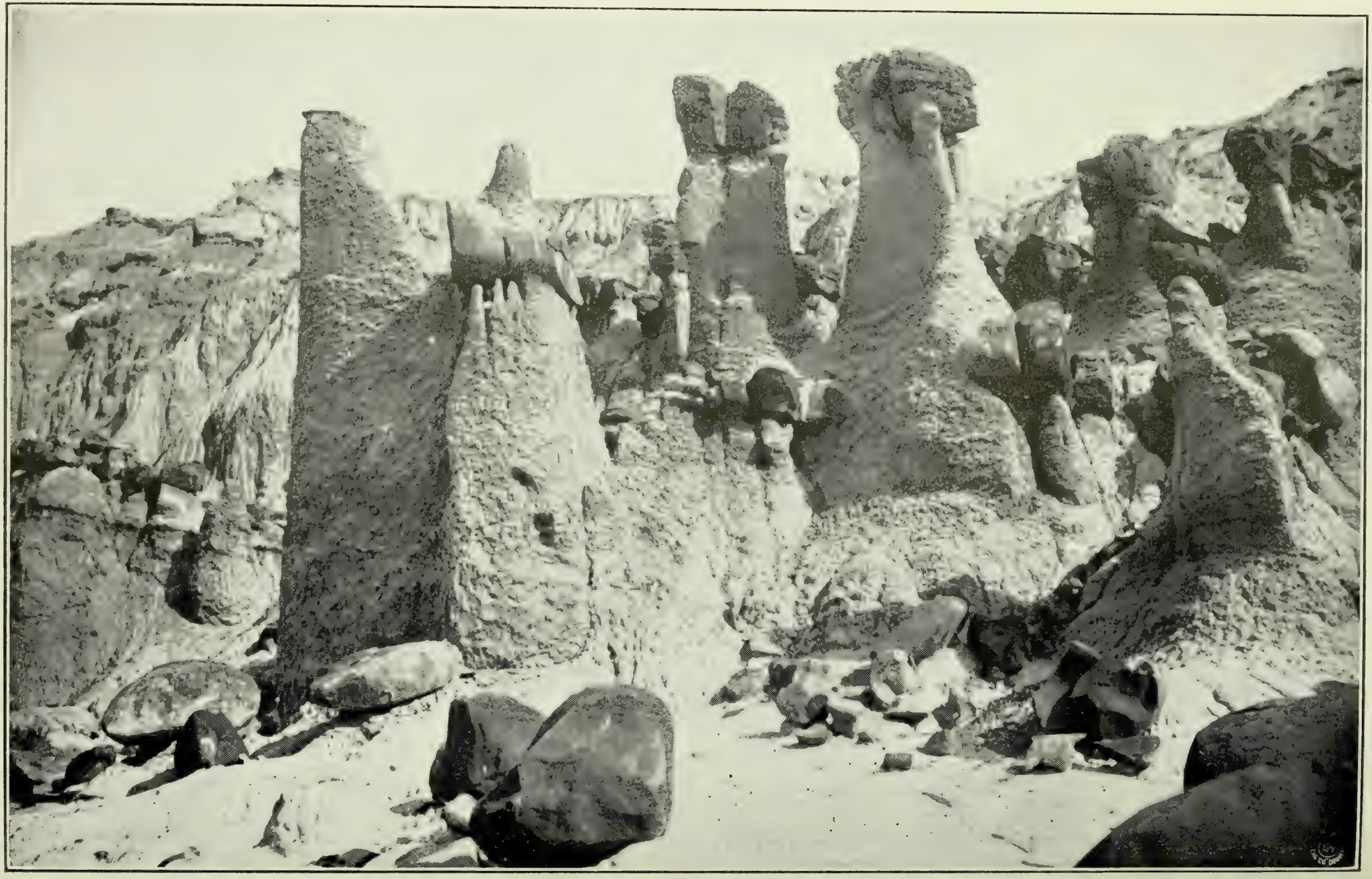
DITCH SURVEYS.

During the year 1899, the ditches diverting water from Owl Creek and tributaries, Grey Bull River and tributaries in Division No. 3, and the Laramie River and tributaries, with the exception of the Little Laramie, a tributary heretofore adjudicated by the Board of Control, in Division No. 1, were surveyed and plats drawn. The surveys on Laramie River began in June, Mr. Wm. M. Gilcrest being engaged to undertake them, the Engineer and his assistant being engaged at the time in other work.

The surveys were prosecuted until October 1st by Mr. Gilcrest, and were thereafter completed by H. B. Carpenter and Edward A. Buck. The work was not finished until in December, the amount involved having proven to be greater than was at first anticipated. The surveys on Owl Creek began and were completed in August, by Mr. A. J. Parshall, Assistant Engineer. The work on Grey Bull River was executed by Mr. Parshall, assisted by Mr. J. Frank Warner and Mr. Sidney Blout, and was begun September 20th and completed November 13th, 1899.

OWL CREEK.

This stream forms the boundary line between the Shoshone Indian Reservation and Big Horn County. It rises among the mountains forming the southeastern end of the high divide jutting out from the main Shoshone Range, and separating the head waters of the Grey Bull River and tributaries on the north from the numerous streams forming the source of the Wind River or Big Horn River, as it is known after cutting the spur known as the Owl Creek Range, on the south. In Owl Creek are accentuated those differences between the flow of the flood season and that of midsummer which prevail in all Wyoming streams. During the spring months, there is a surplus above the requirements of the appropriators, but in an average year the supply practically ceases on July 1st, and thereafter there



THE DEVIL'S GARDEN, METEETSE

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is no water, a late priority being as valuable as one acquired many years previous. The number of ditches surveyed on this stream is twenty-six, having a total length of 55.6 miles.

GREY BULL RIVER.

This fine stream rises among the Shoshone Mountains forming the southwestern wall inclosing the Big Horn Basin, and flowing thence in a northeasterly direction, cuts that part of the Basin lying west of the Big Horn River in two nearly equal parts. It joins the latter stream in Township 52 N., Range 93 W., and has a total length approximating 135 miles. Of this length, that portion lying between the base of the mountains and its mouth, a distance of seventy-six miles, is largely settled with prosperous farmers. The valley varies from one-half to one mile in width, except in the vicinity of the town of Burlington, where it has a width of nearly six miles. The number of ditches surveyed was 129, having a total length of 358 miles. These ditches present no engineering difficulties and have been constructed by means of ordinary plow and scraper work. The utilization of the water supply has not, in all cases, been as economical as will doubtless hereafter obtain when it is fully learned that an over-supply of water is, in the end, vastly more injurious and unprofitable than a shortage of this necessity. That portion of the valley known locally as the Burlington Flats has had water run upon it in such quantities, and so persistently, that the application for a beneficial use has almost become an application to an injurious use, since the soil has become so saturated with water that the traveler is not safe from bogging down both in the high road and upon the fields. The resulting injury to the land by bringing large quantities of alkali to the surface is apparent, and if these fine flats are to continue in that productiveness which has heretofore been a prominent feature of this valley, either subdrainage or a more careful and economical use of the water must be resorted to. Conversation with a number of these farmers showed that the view was held to some degree that they had an insufficient water supply, but the appearance and condition of the soil indicated either a large surplus or a wrong application in time or method. This is not universally true, however, and, in those portions of the valley where the slope toward the river is more rapid, larger quantities of water can be safely and profitably used than where the country is flat with slow drainage. The country around Burlington is exceptionally fine and adapted for the irrigation farmer, but even a casual observation will point out the necessity for greater care than is required in many less favored districts. As the Grey Bull valley presents some of the unprofitable features attending a wasteful use of water it also, in the upper end, by the best example known in the State, demonstrates the possibilities following a sub-drainage of alkalied soils, and the consequent return to a degree of fruitfulness not obtaining at any previous stage of the irrigation. This phase of future irrigation is discussed on another page of this report.

LARAMIE RIVER.

The first appropriator from the Grey Bull water shed dates his diversion back to the spring of 1881, but the first diversion from the Laramie River and tributaries antedates this by fourteen years, forty-six ditches having been constructed prior to the first appropriation in the Grey Bull valley. The appropriations from the Laramie River, and especially from some of its small affluents along the line of the Union Pacific Railway, are therefore among the oldest in the State. The irrigation is chiefly for hay, and the water is spread out over the broad and high rolling prairies, known as the Laramie Plains, lying west of the Laramie Mountains, and after cutting this range, over the lower and more productive mesas in the vicinity of Wheatland, where grain and vegetables are raised in abundance. The land susceptible of cheap irrigation along the Laramie is vastly greater in extent than is found along any other stream of equal size in the State. The reason lies in the fact that the stream is not walled in on either side by bluffs which limit the irrigable area and make ditch construction in carrying water outside these limits expensive. Such an expression as the "valley of the Laramie" is unknown in our local geography. The term would be a misnomer.

One tributary known as the Little Laramie River had been surveyed and its waters adjudicated in 1892. No further surveys were undertaken until 1899, when all ditches taking water from the river and its remaining tributaries were surveyed and plats prepared. The number surveyed was 319, having a total length of 450.2 miles. These surveys were exclusive of the canals of the Wyoming Development Company and the Pioneer Canal Company, both of these companies having filed complete and acceptable maps in the Engineer's office.

Total ditch surveys in 1899 were as follows:

Owl Creek..... 26 ditches having a total length of 55.6 miles.
Grey Bull River 129 ditches having a total length of 358.0 miles.
Laramie River.. 319 ditches having a total length of 450.2 miles.

Totals.....474 ditches having a total length of 863.8 miles.

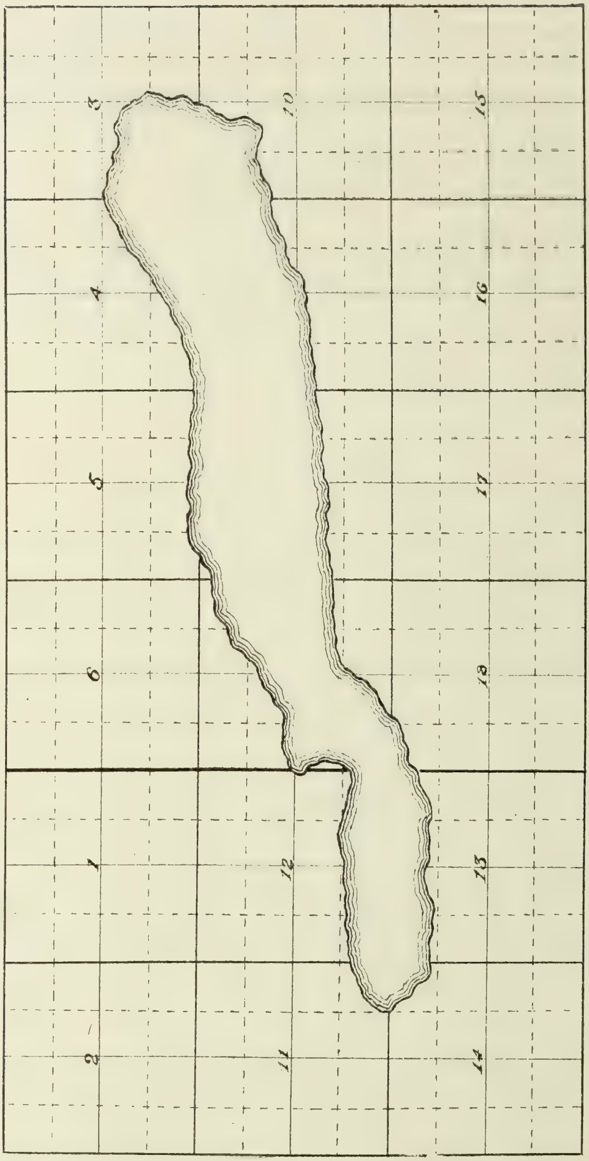
No ditch surveys were undertaken in the year 1900; on account of lack of funds for this work.

RESERVOIR CONSTRUCTION.

The subject of reservoir construction, to impound our flood waters, has become of widespread interest. The importance of retaining for our own use waters which now go to waste has always been recognized, but, owing to our possession of a supply heretofore approximating our needs, the problems connected with the question have been relegated to the future. This indifference cannot longer prevail unless we cease our agricultural growth.

As to the direction in which ou energies should be bent, no difference of opinion is found. It is agreed that only the General Government can undertake the work and carry it to a successful issue. The amount involved, while insignificant compared to the wealth created, is too great for private enterprise. In addition to this, reservoir construction for supplying water to others has not, as a rule, proven a profitable investment. On the other hand, impounding water by actual users has some discouraging features in that the impounded water and the land to be reclaimed are not adjacent. Transportation usually by way of a channel of a running stream. the waters of which are already over-appropriated, is the only way to get the water upon the land. This involves refined methods of administration, and private capital has refused to take the risks of a failure to secure the water after the expense of impounding it has been

Boulder Lake, a Reservoir Site in Fremont County.



Superficial Area. 1.798 Acres. Capacity, 57.000 Acre Feet.

BOULDER LAKE.

met. That this fear is not founded upon experience so far as Wyoming is concerned, has thus far made no difference. Either the absence from our law of any special provision fixing the rights of the owner of a reservoir and providing for the distribution of stored water, or the fear that the water, after storage, would not be in sufficient demand to make the investment pay, has deterred construction work. But whether or not reservoirs are a paying investment, they are unquestionably necessary if development is to continue.

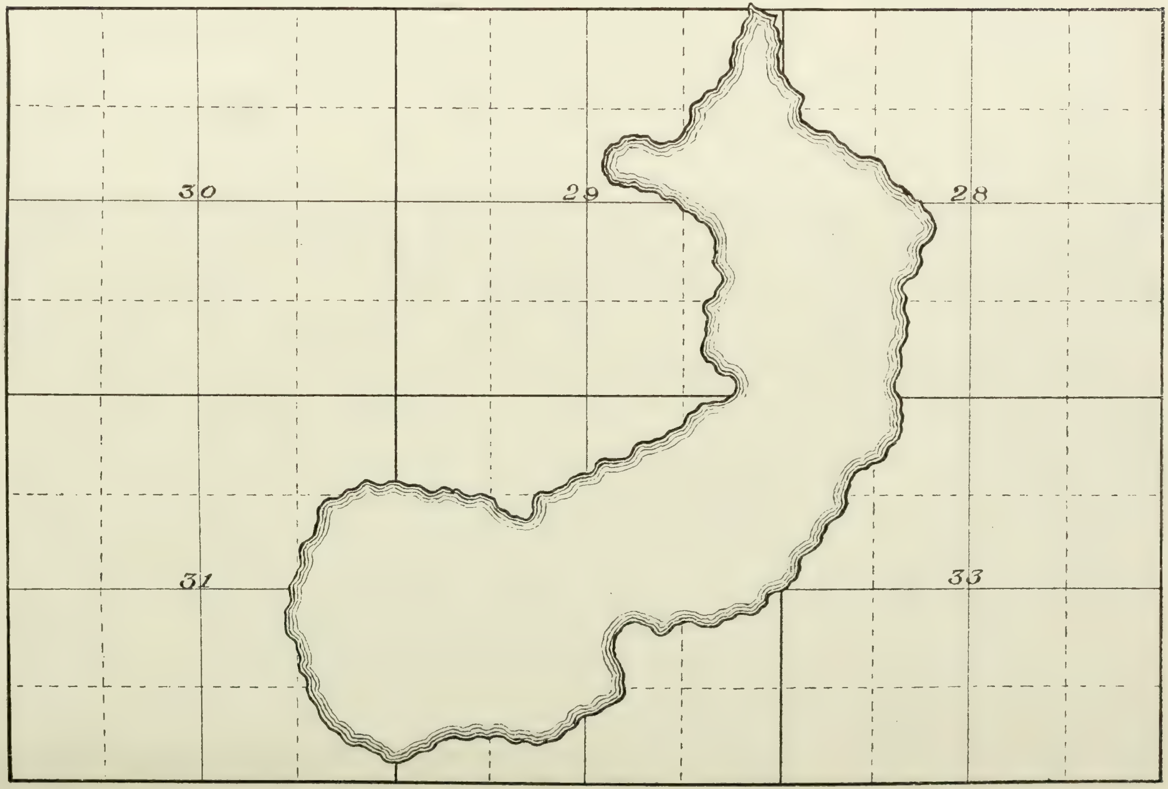
RESERVOIR SITES—BOULDER LAKE.

The opportunities for storing water cheaply in the Green River Basin are unsurpassed anywhere. Every affluent of New Fork, from the east, flows through at least one lake capable of being cheaply utilized to impound water for irrigation. The first of these examined was Boulder Lake, situated on Boulder Creek, in Township 33 N., Ranges 107 and 108 West. This lake is five miles long and from one-half to three-fourths of a mile wide. It has a superficial area at the present water line of 1,798 acres which it is estimated would be increased to 2,000 acres by raising the water surface a height of thirty feet. The volume of water impounded would not fall below 57,000 acre feet and would probably be nearer 60,000 acre feet. The water stored here would not be utilized on Boulder Creek itself, but could be taken out and distributed over the land lying between this stream and New Fork. It appears from the lay of the divide to the east that this water might be utilized in irrigating the large mesas lying west of the Big Sandy River and, if so, would be an extremely valuable adjunct to the irrigation which appears to be inevitable along that stream.

BURNT LAKE.

Just north of Boulder Lake, and at a distance of one mile, is Burnt Lake, situated in Township 34 N., Range 107 West. This lake covers an area of 808 acres, and water exceeding 17,000 acre feet could be impounded by raising the surface twenty feet. Fall Creek flows through the lake from end to end and forms its outlet. The water impounded here could be utilized

BURNT LAKE, A RESERVOIR SITE IN FREMONT COUNTY.



Superficial Area, 808 Acres. Capacity, 17,000 Acre Feet.

BURNT LAKE.

on land available under the storage in Boulder Lake, although a short ditch connecting Fall Creek with a gulch draining into Boulder Creek would be necessary if the water were diverted upon the Big Sandy mesas. Burnt Lake has a length of two miles and an average width of about one-half a mile.

MEADOW LAKE.

This lake is situated on unsurveyed land in Township 34 N., Range 108 West, and is on a tributary of Pole Creek. In size it is about the same as Burnt Lake, and will store an estimated volume of 15,000 acre feet.

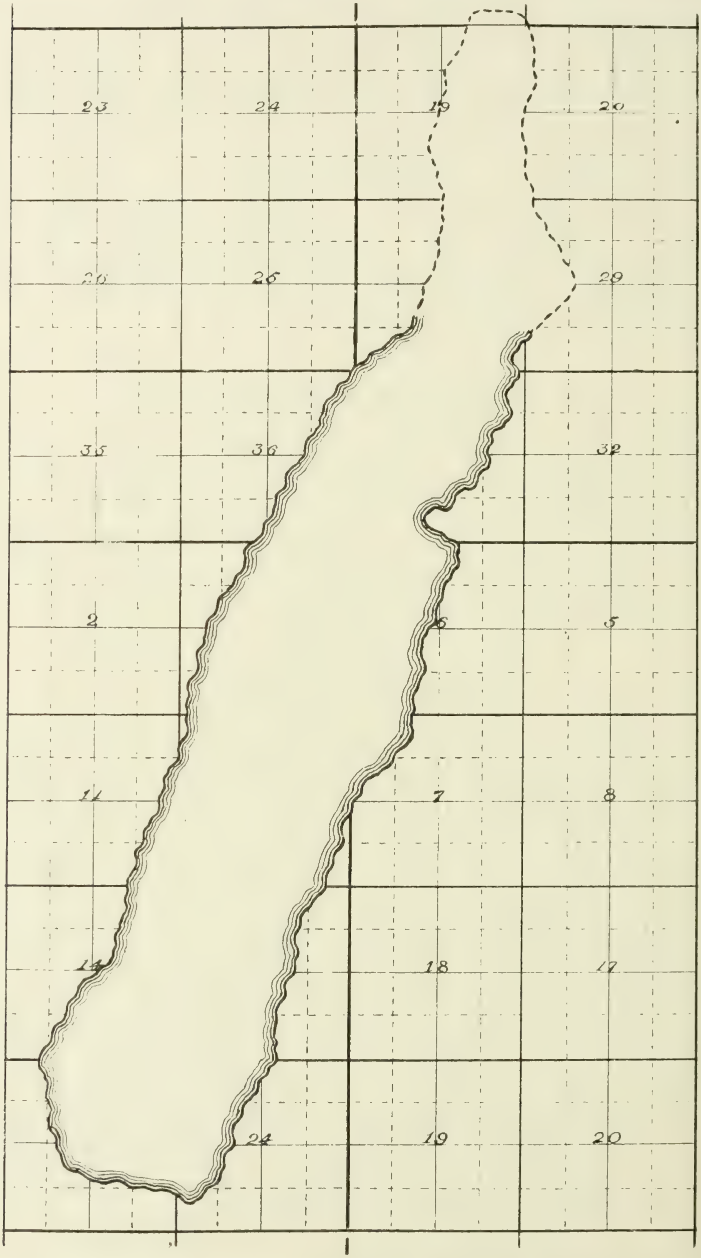
FAYETTE AND HALF-MOON LAKES.

These are both fine bodies of water, the latter being about four miles long and about one-fourth of a mile wide. Both are situated on Pole Creek, but being on unsurveyed land, the submerged area could not be given. From the appearance of these lakes viewed from the mountain side above them, 20,000 acre feet could be cheaply stored in the two.

FREMONT'S LAKE.

This fine body of water lies in Townships 34 and 35 N., Ranges 108 and 109 West. Its area could not be determined on account of its upper end being on unsurveyed land. That portion which has been surveyed has an area of 4,262 acres. The level of this lake could be cheaply raised to a height of fifty feet above its present surface and would impound between 225,000 and 250,000 acre feet for irrigation. This lake is the largest in the State outside of the Yellowstone Park and Jackson Hole, and certainly is not exceeded anywhere in the depth and clearness of its blue waters or the wild beauty of its environments. It is situated just to the southwest of Fremont's Peak, the highest mountain in Wyoming, and Pine Creek, which rises at the base of the peak, flows through the lake from end to end. The length of the lake has never been determined, but is estimated by the ranchmen in that vicinity at twelve miles. The volume of impounded water, estimated above, is

FREMONT'S LAKE, A RESERVOIR SITE IN FREMONT COUNTY.



Area, 4,262 Acres. Capacity, 225,000 Acre Feet.

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NEW FORK LAKE.

based on a length of only seven miles, but should the greater length be correct, upwards of 300,000 acre feet of water could be stored without increasing the height of the dam. Had this large volume of water with its attendant source of supply been located in any other water division, it is believed that investors would long ago have undertaken to make use of it and have taken their chances on being remunerated by the irrigator who becomes dependent upon it.

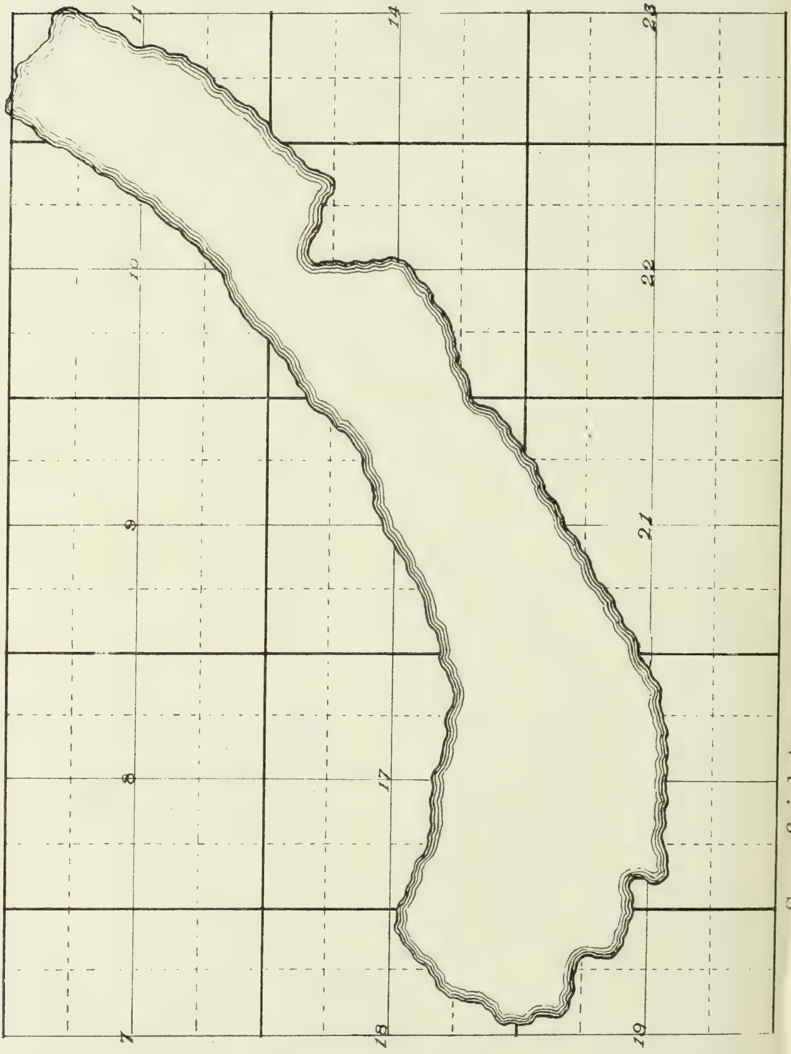
WILLOW LAKE.

This lake is situated on Lake Creek, a tributary of Willow Creek, a stream flowing into New Fork, in Township 34 N., Range 109 West. It is about five miles northwest of Fremont's Lake. Willow Lake has a superficial area of 1,795 acres and presents the same advantages for storing water as prevail in the lakes previously described. A visit to the site for the dam was not made, but those familiar with it said it was the equal of any of the others. It is probable that a thirty-foot dam would impound over 50,000 acre feet of water.

NEW FORK LAKE.

This lake is on New Fork River where the latter passes out of the mountains in Township 36 N., Ranges 109 and 110 West. It covers an area of 1,211 acres, and ranchmen on New Fork River, who experienced a shortage of water during the past season, are already making inquiries as to the steps necessary to store water here. An examination of the site for the dam, without actual measurements, indicated that the crest of a dam to store twenty feet of water would not be over 300 feet in length, and the material for its construction would not have to be hauled a greater distance. This would impound not less than 25,000 acre feet of water and would fill all the requirements of the lands along the stream.

The above eight lakes, with a total capacity of over 400,000 acre feet storable at a probable average cost of less than fifty cents an acre foot, are all tributary to New Fork River and to Green River below the junction of the two streams. As stated above, the opportunities found in New Fork Lake alone will probably be sufficient to fill all the demands on that stream above the mouth of Pine Creek, and it therefore becomes a question as to where the waters of the remaining lakes shall be utilized. Through the efforts of Judge Knight and Senator



Willow Lake, a Reservoir Site in Fremont County.

Superficial Area, 1,795 Acres. Capacity, 50,000 Acre Feet.

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NORTH PINEY LAKE.

Warren, a survey by the Hydrographic Department of the U. S. Geological Survey during the coming year has been secured to demonstrate whether the waters of these lakes may not be taken out through New Fork River and carried thence by suitable canal over into the water shed of Big Sandy River and used as a supplemental supply to reclaim the large areas on both sides of that stream.

NORTH PINEY LAKE.

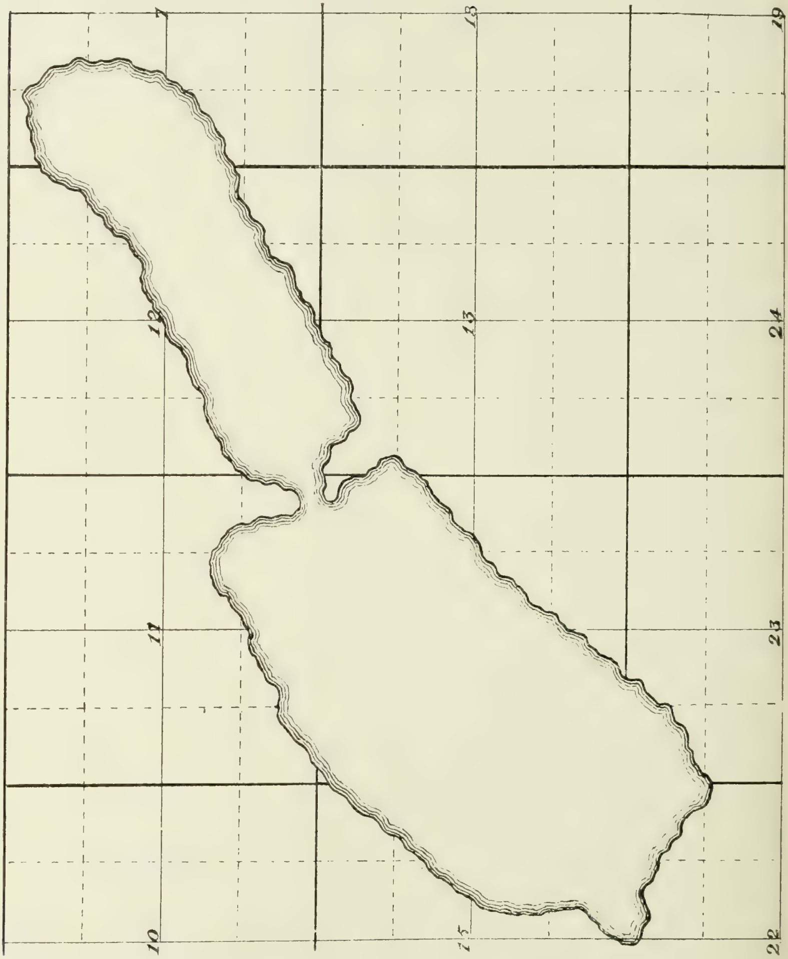
A small lake on North Piney Creek in Sections 20, 29 and 30, Township 31 N., Range 115 W., having an area of sixty-four acres. The site for the dam is very narrow and a dam of a height of twenty feet could be cheaply built. It would impound 1,280 acre feet of water. The material for an earth and loose rock dam may be had within a short distance of the site. There is also a good site for a reservoir in the southeastern part of this township on the same stream. A low dam is already in use at that point for furnishing power for milling purposes. There were no data at hand for a determination of the capacity of this site for storing water, but it appeared to be the better of the two.

MIDDLE PINEY LAKE.

This lake is three and one-half miles south of North Piney Lake, and is a much larger body of water, covering 150.4 acres. A dam sufficiently high to raise the surface of this lake twenty feet would impound not less than 3,100 acre feet of water. The three available sites on the Pineys, so far as investigation has been carried, present possibilities for the cheap impounding of about 7,000 acre feet of water.

RESERVOIRS IN CONFLICT WITH PRIOR RIGHTS.

Complaint has heretofore been made to this office to the effect that a party who had constructed a reservoir across the channel of a stream was impounding water therein during a season of scarcity when said water should have been permitted to pass through the reservoir for the use of prior appropriators. It was claimed that the owner of the reservoir refused to open the sluice-way through his dam, to the great injury of those who were entitled by virtue of their priorities to the use of this water. There having been no appropriation by the State to cover contingencies of this nature, the question as to whether or not the



New Fork Lake, a Reservoir Site in Fremont County.

Superficial Area. 1,211 Acres. Capacity, 25,000 Acre Feet.

owner of the reservoir could be compelled to build at his own expense such measuring devices as would secure an equal and fair distribution of water, as is contemplated by our laws, was submitted to the Attorney General, as follows:

Cheyenne, Wyo., April 10th, 1900.

Hon. J. A. Van Orsdel,
Attorney General,
Cheyenne, Wyoming:

Dear Sir—

I have been requested by an appropriator of water to make certain regulations regarding the distribution of water coming from a reservoir which has been constructed across the bed of a stream, and for the purpose of determining whether a regulation meeting the requirements could be enforced, I would be greatly obliged for your official opinion in the following:

If, acting under authority granted by Section 851, R. S. 1899, and for the purpose therein set forth, a Division Superintendent requires a necessary measuring device at some point in the stream itself, near or above the headgate of the ditch of the appropriator, is it the duty of the County Commissioners to construct such flume or measuring device under the same conditions as those under which they are required to construct these flumes and measuring devices in Section 930?

Very truly yours,
FRED BOND,
State Engineer.

Cheyenne, Wyo., April 11th, 1900.

Hon. Fred Bond,
State Engineer,
Cheyenne, Wyoming:

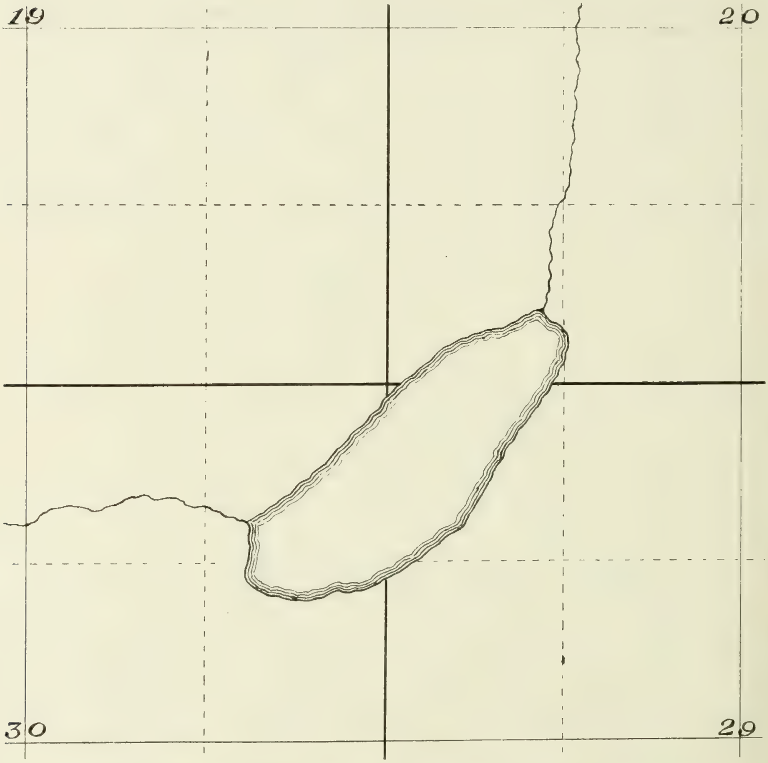
Dear Sir—

I am in receipt of your communication of April 10th, in which you submit, for my opinion, the following question:

* * * * *

Answering the above inquiry, I have the honor to advise you as follows: Section 951 of the Revised Statutes, 1899, authorizes the Division Superintendent to make such rules and regulations as he may deem necessary to secure the equal and fair distribution of the water of streams within his Water Division. These rules and regulations must not be in violation of the laws of the State. Section 930, Revised Statutes 1899, requires each appropriator of water to maintain a headgate and measuring device in his ditch at or near the point of diversion from the stream, and provides upon his failure to construct such headgate and measuring device the County Commissioners shall order one constructed and collect the cost of the construction of same from the owner of the ditch, in the same manner as delinquent taxes are collected. There is clearly no authority given the County Commissioners in this section to construct a measuring device in the channel of the stream and the County would have no lien for the construction of such device. There is nothing in the law requiring the appropriator to construct anything outside of his ditch and the authority of the County Commissioners rests entirely upon the failure of the appropriator to comply with the requirements of the law. If the owner of the reservoir was the only appropriator, and used the channel of the stream for a ditch, it is possible the section above referred to could be made to apply, but when ditches are constructed from the stream, the law provides for the headgate and measuring devices to be constructed in the ditch and no other place.

NORTH PINEY LAKE, A RESERVOIR SITE IN UINTA COUNTY.



Superficial Area, 64 Acres. Capacity, 1,280 Acre Feet.

I am therefore of the opinion that the sections of the stat-

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CLEAR FORK FALLS.

ute referred to do not apply to the case set forth in your inquiry.

Very truly yours,
J. A. VAN ORSDEL,
Attorney General.

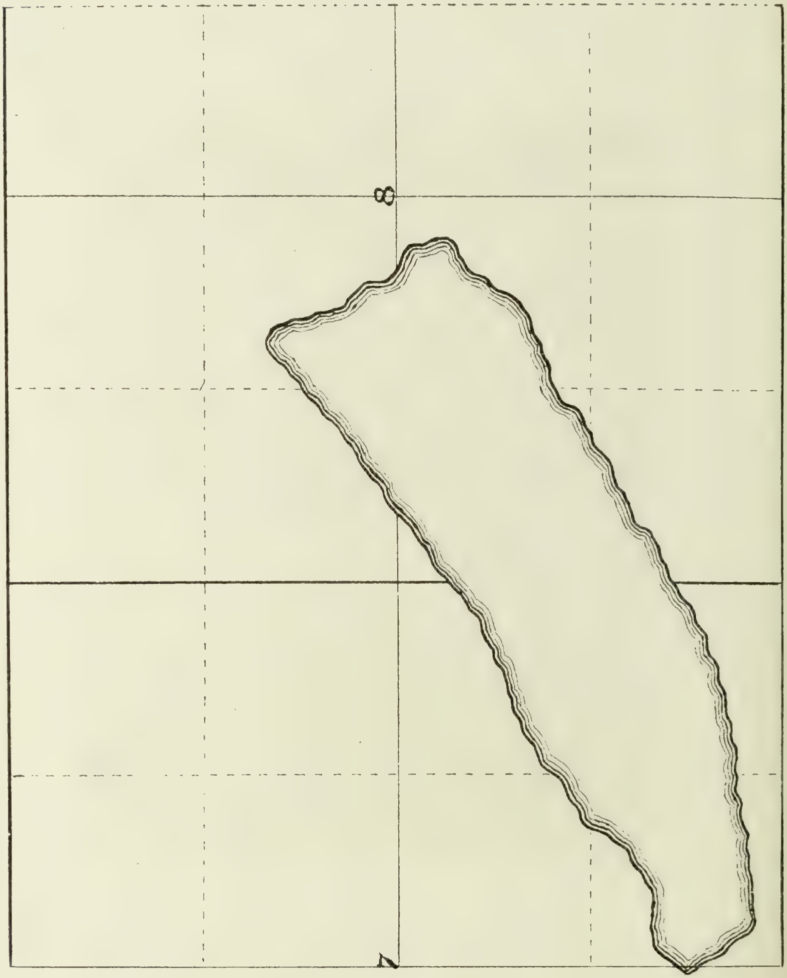
It therefore appears that where water is impounded in a reservoir, built across the channel of a running stream, the law provides no means whereby an equal and fair distribution can be made by those who are charged with this duty.

GREEN RIVER BASIN.

In his report for 1894, the State Engineer says: "A description of irrigation along the Green River and its tributaries is chiefly striking for the showing it makes of the opportunities which are unused rather than the value and importance of what has been accomplished." During the past six years, however, there has been a material change in the conditions prevailing along this stream, and especially is this true of the tributaries. The three Pineys are so nearly appropriated that the services of a Water Commissioner have become a necessity. This is true also of New Fork, the largest tributary from the east, and the number of applications for water rights, during the past two years, along other streams discharging into Green River, show that the adjudication of its waters should not be longer delayed.

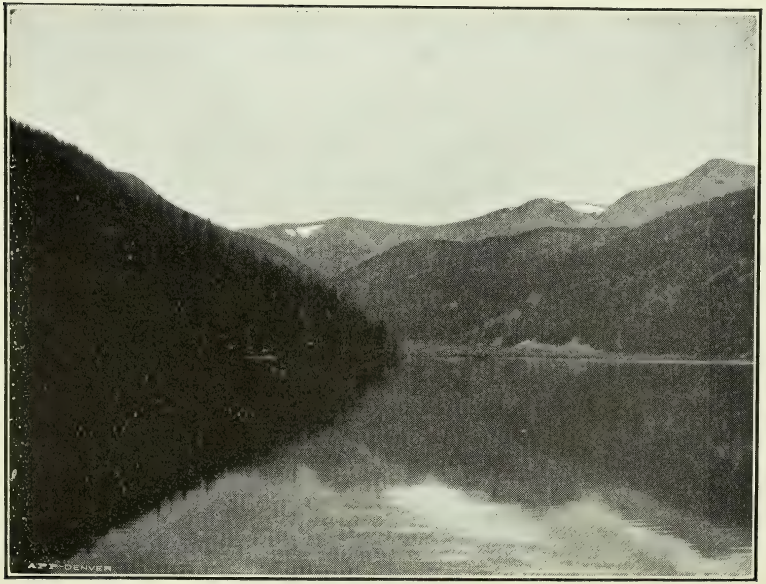
Since 1894 permits for 189 ditches and canals to irrigate 62,343 acres of land, at an estimated cost of $93,471, have been approved for the Green River Basin and settlement has appeared to be more rapid during the past year than at any previous time. The total number of unadjudicated appropriations of water from Green River and tributaries is 303, comparatively few of these being from the river itself. There yet remains unappropriated water in some of the feeders, but at the present rate of appropriation, the official supervision of the division of these waters will soon become a necessity. Petitions have already been received asking the adjudication, and it is hoped the surveys may be undertaken in 1901.

During a trip over Green River Basin, in September, 1900, an examination and gauging of all the principal tributaries of the river was made. The object of the undertaking was to learn, not only the condition of the water supply, but also to determine as far as might be without making actual surveys, the possibilities for conserving the flood waters. The streams were all comparatively low, but none were dry, although Big Piney and its branches and New Fork, above its junction with Pine



Middle Piney Lake, a Reservoir Site in Uinta County.

Superficial Area, 150.4 Acres. Capacity, 3,100 Acre Feet.



MIDDLE PINEY LAKE.

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Creek, the outlet of Fremont's Lake, were practically all appropriated.

The examination began at Big Piney postoffice, where North and South Creeks were both gauged. The discharge of South or Big Piney Creek on September 18th, 1900, was 1.3 second feet and the discharge of North Piney Creek 4.8 second feet. These streams, with the exception of flood waters, are practically appropriated, and the earlier appropriators complain of not being able to secure the water to which they are entitled. It appeared, however, that as the water shall become more valuable there may be a more economical use of it. The irrigation is chiefly for hay and an increased growth of grass for pasturage. Good potatoes are grown, although the crop is not uniform in quantity, and all kinds of garden vegetables that are produced at this altitude thrive here. The soil of the Big Piney meadow is a dark clay loam, but is impregnated with a considerable per cent. of alkali, which comes to the surface whenever too much water is used. The alkali has not, however, proven so injurious as in those sections of the State where the irrigation is for small grain, owing probably to the fact that the alkali deposits more rapidly on ploughed lands through more rapid evaporation of the water holding it in solution. The hay is all native, no attempts toward cultivating alfalfa having been made except one or two experiments on wet bottom lands, where the roots of the plants reached perpetual water at a depth of three feet. These experiments were not a success, though the first year gave great promise. The experiments have seemed to demonstrate that alfalfa dies as soon as the roots reach water, and agree with the experience of others in various parts of the State, although the failure may possibly be owing to other causes not known.

The lands along Green River, from the mouth of Big Piney up to the mouth of New Fork River, a distance of about ten miles, are practically uninhabited, although one small ranch was passed. The opportunities for irrigation are limited, such as were seen having been passed for the better locations further up both streams.

New Fork River was gauged at a point about three miles above its junction with Green River. Its width was sixty-eight feet and the flow was 74.3 feet per second. New Fork postoffice is located on the East Fork of New Fork, just above the junction of that stream with New Fork River, and thirty miles from Piney Creek. The flow of East Fork at this point, on September 19th, was estimated at about eight second feet.

Boulder Creek, with a flow of three second feet; Fall Creek, with one-half a second foot; Pole Creek with 8.52 second feet and Pine Creek with a flow of 71.4 feet were successively crossed and gauged. Pine Creek, as the gauging shows, was far the largest of all these tributaries of New Fork from the east, a far larger and finer stream than New Fork itself, at the junction of these two streams, and should properly have been named as the principal stream. It is a roaring mountain torrent, even at the end of an unusually dry season. About five miles above the point gauged, it forms the outlet of Fremont's Lake. At Cora postoffice, about thirty-eight miles north of Piney Creek by direct stage route, New Fork carried not to exceed two second feet. It is in this section that some of the earlier appropriators were unable to secure water to which they were entitled during the past season. They appear practically unanimous in asking for an adjudication, and the matter will be laid before the Board of Control at its next meeting. Irrigation ditches obtain for about six miles above Cora postoffice, but no more were seen from Alexander to Wells, the latter being the last and farthest north of the postoffices on Green River.

From Wells postoffice to Green River Lakes, a distance of twelve miles, there is but little irrigation, although Mr. Robert L. Osborn, whose ranch is just at the outlet of Green River Lakes, has a few ditches in use. The irrigation is for hay alone.

Green River Lakes are two in number, and are situated just within the Wind River Mountains, the point where the river leaves the lower lake being also the point where it leaves the mountains. A gauging of the river, a few hundred feet below the lower lake, gave a flow of 89.4 second feet.

The scenery in the vicinity of Green River Lakes is very fine, being equalled, as is claimed by those familiar with both sections, only by that in the Yellowstone National Park, and surpassed nowhere in Wyoming. The altitude of the lakes, by aneroid, was 8,100 feet.

The examination of the streams discharging into Green River from the west was made on the return. Beaver Creek,

LOWER GREEN RIVER LAKE.

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below the junction of its three branches, had a surface width of twenty-six feet, but was shallow. It gave a flow of twenty-five second feet. Horse Creek was gauged at the ranch of T. E. Andrews, in Section 11, Township 34 N., Range 112 W., and gave a flow of 11.8 second feet. North and South Cottonwood Creeks were gauged in Township 33 N., Range 112 W., and gave flows of 15.7 and 17.7 second feet respectively. The latter four streams are rapidly settling up, sixteen permits for new ditches having been approved in the past few months. The surveyors' stakes, locating the proposed Yellowstone branch of the Burlington Railway, were conspicuous along and running up the Middle Fork of Beaver Creek, whence they cross the divide and pass down Hoback Basin on the west and on into the Jackson Hole country. The construction of this road will lend a new impetus to irrigation in this section, and will cause a rapid influx of population and a material increase of wealth of all kinds.

Green River Basin, from La Barge Creek to its northern limits, is devoted to the raising of horses and cattle, sheep being unknown, except for very short intervals. The grass here is comparatively plentiful and does not show the over-feeding and over-stocking of the country south and east of La Barge Creek. It is, on the whole, fine grazing country, and while, on account of the altitude, it will never show the diversified farming of those sections of the State which enjoy an equal water supply and a much lower altitude, there is every reason to believe that it will not be any the less prosperous nor its people less happy and contented.

WATER FOR LIVE STOCK.

The crowding of the public ranges with live stock, consequent upon advancing prices of meat and wool, together with the leasing by the State of school and other lands for grazing purposes, has introduced some new questions for solution by this office.

Between the wishes of the applicant for stock water on the one hand and the interests of the public on the other, both being recognized as factors for the consideration of the Engineer in the law defining his authority, it often becomes a serious problem just how far the one may be granted without materially interfering with the rights of the other.

The gravity of the question is enhanced by the fact that, in most cases, the amount desired for stock water is so small that it is not susceptible of measurement by the methods usually and necessarily employed in determining the volumes used for irrigation.

A flow of one-tenth of a cubic foot per second is measurable, though with difficulty, and a hundredth of a foot would be absorbed by the soil in the ditch before it had gotten out of sight of the headgate, yet the latter volume is equivalent to 6,500 gallons per day and is sufficient to water all the stock of the average Wyoming farmer.

The conduit by means of which all these appropriations are carried, when diverted from their course at all, is necessarily an open ditch constructed in soils of varying degrees of permeability to water and subject at all times to the large evaporation of the arid region, so that even were sufficiently refined methods of measurement adopted at the headgate, the economical transportation of stock water alone becomes extremely precarious, if, indeed, possible.

Applications for stock water have, heretofore, been largely made in conjunction with applications for irrigation purposes, and were generally confined to those cases where the land to be irrigated lies at some distance from the natural stream from which the diversion was made. During the past two years, however, owing to the increasing value and scarcity of water for range stock, many applications for the control of springs upon the public domain, for stock water, have been received. But in all cases wherein a grant of a monopoly of water carried with it a monopoly of a portion of the public domain, not otherwise obtainable and to the enjoyment of which all citizens are equally entitled, the proposed appropriation has been uniformly held as against the public interests and the application refused. In those cases, the application for permit has been returned with the following endorsement, which was at the same time made a matter of record in the Engineer's office: "This application is returned without my approval for the reason that the spring sought to be appropriated is upon the public domain, and a monopoly of its waters for stock purposes by the applicant is detrimental to the public interests."

LIMITATIONS AS TO TIME.

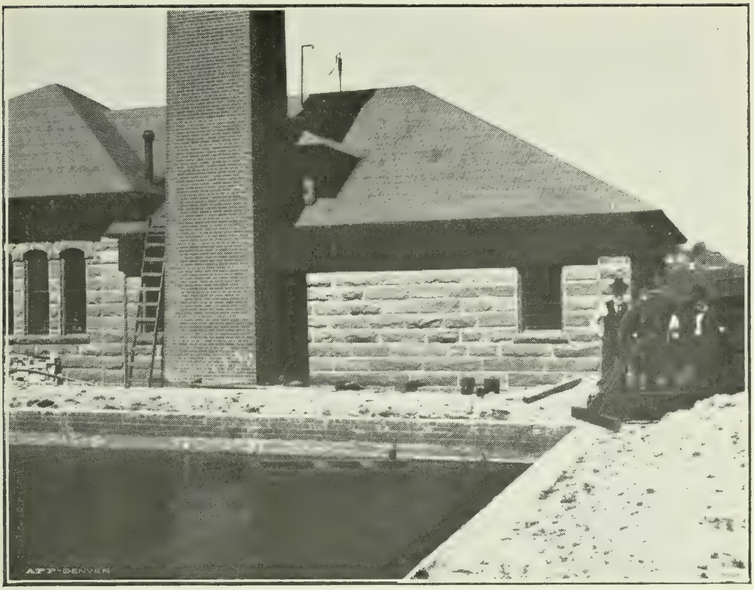
In applications to appropriate water for stock upon lands owned by the State, it has also been found necessary to consider certain factors which do not obtain in applications for irrigation purposes. In such cases, the interests of the State and the interests of the public are treated as identical, and it is held that to give an individual lessee of such lands perpetual control, for stock purposes, of the only water found thereon, is to invite an immediate surrender of his lease with the certain consequence that no one else would apply for it, the presence of water being wholly responsible for the application to lease. Whoever controls the water owns the land. On the other hand, a lessee who has entered into contract to pay certain rentals to the State for a term of years, for the use of State lands, and has made application for water thereon, is entitled to and should receive proper protection against appropriation by others. With the purpose, therefore, of protecting the State against the destruction of values in its leased lands by any ruling of this office and at the same time to secure a lessee in his actual necessities, thereby providing for a continued and perpetual income to the State, permits of this class have been approved with the following limitation: "The use of water sought to be appropriated in this application is from and upon the lands of the State of Wyoming, and the right to such use for the purpose named in this permit is granted only until the lease of lands is surrendered by the lessee or is abrogated or cancelled, in any of which events this permit shall at once lapse and become void." This limitation of the right to use water might possibly have been secured by requiring the appropriator to use the water in situ, but the question as to his right to continue in its use after the lease has passed into other hands was avoided by the method of limitation adopted. There has, as yet, been no complaint against this time limitation, many of the appropriators stating, at the time of filing their application, that they only desired protection while paying rentals on the land, and would have no use for the water when the lease should pass into other hands.

IMPOUNDING STOCK WATER.

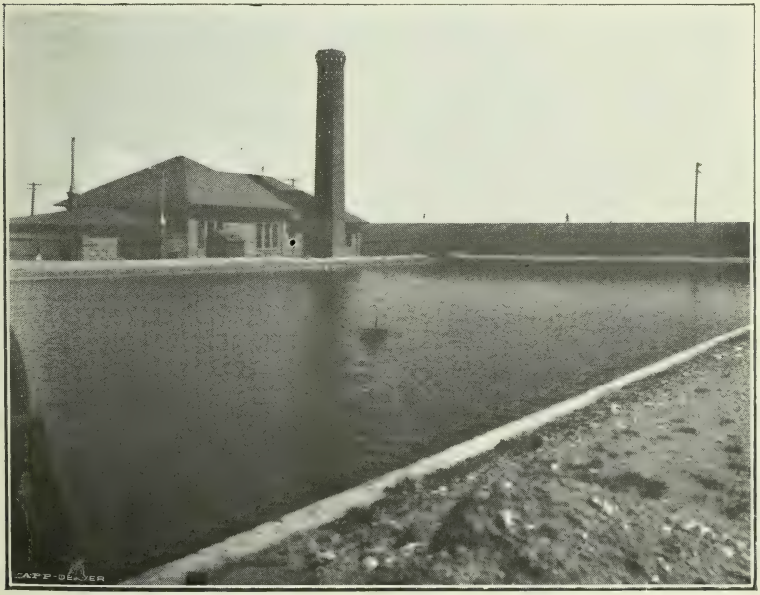
In many parts of the State, the only water now available for appropriation is the volume of so-called surplus water, which fills the streams at the time of the spring floods, and application to impound the same for a beneficial use has always received encouragement by this office. These waters cannot, however, be longer considered as either surplus or waste waters, and their economical distribution and use has become as much a part of the care and duty of the Engineer as any other waters under his supervision. The volume necessary for irrigation purposes is comparatively so large that difficulties in securing flood waters arise very largely through the scarcity of suitable sites for their safe storage within the necessary limits of cost. Rarely, if ever, has an application to impound water for irrigation been filed in the Engineer's office where the volume impounded was sufficient for the entire needs of the lands to be irrigated, the large majority being for a supplemental supply in times of scarcity or drouth. Applications to impound water for stock purposes, for reasons heretofore given in regard to making appropriation through ditches. require a more careful consideration and scrutiny if there is to be the same economical use of these floods as is required of the streams' average flow. It has been the aim of this office to secure this as far as possible, and when application has been made for stock purposes, inquiry as to the number of stock to be watered has been made of the applicant before his application has been passed upon. The volume to be impounded under his permit is then limited to the needs of the number of stock for which application is made. The result—a sufficient supply for the use of the applicant and water still left for the use of others.

UNDER-DRAINAGE OF IRRIGATED LANDS.

The capital and energies of the Wyoming irrigator are now devoted to getting water upon the land. The ditch must be built, the appropriation must be made, and the land reclaimed. To most irrigators, especially in the beginning of their undertakings when land is cheap, this is the whole problem. Along many of our streams, however, an occasional field whitened with



METER GAUGING STATION, CHEYENNE.
U. S. Dept. Agriculture.



METER GAUGING STATION, SHOWING METER IN TRANSIT.

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alkali and overgrown with foxtail hints of the near approach of other questions which must soon engage the thoughtful attention of the farmer.

All Wyoming soils are impregnated with alkali. It varies in amount, but there is no section so free from it that an improvident and wasteful use of water will not bring it to the surface and greatly injure the soil.

In many parts of the State, especially in the more narrow valleys having a rapid slope toward the stream, a careful application of the water may put off the evil day indefinitely, but in others the farmer is already perplexed by the alkali problem. The abandonment of his claim and subsequent settlement on a new one, assuming that water could be transferred from the old to the new land, determines nothing: for in the same length of time which it took to ruin the old claim, the new one will be in like condition.

Moreover, the irrigation of the new tract will, in each successive move, be more expensive than the old, the lands first to be irrigated being those nearest the stream. At best, the change involves a new home building, far more expensive than the first one and by those, too, who have already exhausted their rights under our land laws. Ultimately, the irrigable lands are all taken up, and the farmer, under conditions far harder to surmount, is compelled to employ the same methods for reclaiming his reclaimed lands as might have overcome the difficulties in the first place. He is not the only loser either, for the State, in the first place, in the abandonment of its best irrigable lands along and near the streams, will have suffered immeasurable loss.

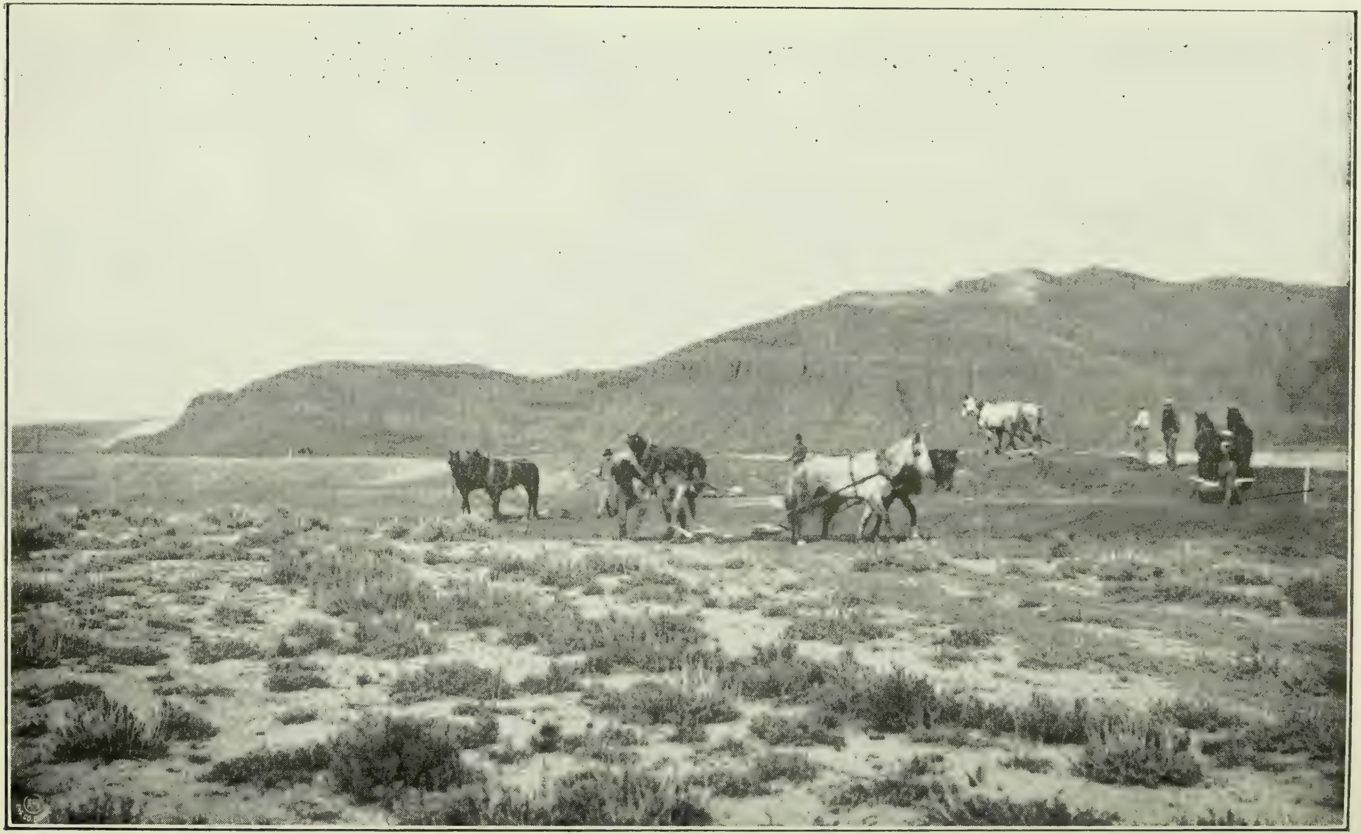
It is evident that such an outcome is not possible where the water is attached to the soil, since there is then every incentive to protect and improve the holding and no inducement to make a change. Nor is a change necessary. Practical experience has demonstrated that no land can be ruined beyond redemption by either water or alkali. Commenting upon the possibilities of reclaiming alkali lands in Utah, Prof. Whitney of the Department of Agriculture, speaking of the large tract of alkali lands lying between Salt Lake City and the lake, says: "Adequate artificial drainage is the only practical means of reclaiming the lands and providing against further disaster." He estimates the value of eighty square miles of this land, if thoroughly drained, at three millions of dollars. At present they have scarcely a nominal value.

We have, however, and much nearer home, a practical demonstration of what may be accomplished by under-drainage. The farm of Mr. Otto Franc, on Grey Bull River, like many others along that stream, early gave evidence of the presence of alkali in the soil and in such amounts as to greatly impair its value and threaten its final ruin. Sub-drainage was undertaken as a possible remedy and with results exceeding the expectations. The drains were made by nailing together three two-inch planks in the form of a flat-bottomed trough, the sides being prevented from falling in by nailing to them cross cleats a few feet apart. These troughs were then inverted, placed end to end in the bottoms of the drains and covered with earth up to the surface of the ground. The trenches to receive the drains were cut about three feet deep.

The water which at first flowed from these drains was strongly impregnated with alkali, but alkali being soluble in water has rapidly leached out of the soil, and from the mouth of each there now flows a living stream as soft and sweet as the waters coming direct from the Snowy Range above.

The owner of this system has found in it another use of great economic value in that the water, even in the coldest weather, does not freeze for a considerable distance from the points of discharge. These places are consequently the daily resort of the live stock of the place, the water being preferred to that of the river. The old daily task of chopping and keeping open holes through the ice in winter has been abandoned, a bountiful supply of softer, purer and better water being always at hand and just at the points where it is needed most.

France and Italy have laws governing under-drainage of irrigated lands and they are a necessary concomitant to the irrigation laws of those countries. That the subject will one day become of sufficient importance to demand legislative action in Wyoming there can be no doubt. Lands now being irrigated were virgin prairie only yesterday, so the need of regulations to govern the disposal of seepage water has not as yet been felt. Just so soon, however, as the lower lands become seriously affected by the leaching out and depositing of the alkali up-



FIRST GRADING ON THE BURLINGTON, BIG HORN BASIN, MAY, 1900.

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on them from those above, there will be discovered the need of a provision for the care and disposal of these waters by those responsible for their presence. Cheap surface ditches will in most cases answer the purpose and the largest part of our lands, on account of the naturally steep slope of the surface, will never need artificial drainage. The subject is mentioned here for the purpose of pointing out a cheap and effective way of reclaiming those whitened spots that are the despair of our farmers.

RECLAMATION UNDER CAREY ACT.

During the past year, applications have been filed with the State Board of Land Commissioners for the segregation of 87,000 acres of land to be reclaimed under the Carey Act. In addition to this, a contract has been let by the Board for the reclamation of 17,755 acres, previously segregated, but never reclaimed, the company undertaking the work having failed to fulfill their contract.

Of the larger tract, 78,747 acres lie under and are to be irrigated from the Cody & Salisbury Canal. These lands are principally on the north side of the Shoshone River. Under the Bench Canal, which diverts water from the Grey Bull River, 3,610 acres are to be reclaimed. Fifteen hundred and twenty acres are to be reclaimed under the Sage Creek Canal, which is projected to utilize waste and seepage water from the Burlington and Bench canals; 320 acres lie under the Fisher Ditch, taking water from Pole Creek, a tributary of New Fork River, in Fremont County, and 3,323 acres of additional lands lying under the Sidon Canal, formerly the Cincinnati Canal, to be reclaimed in connection with the 17,755 mentioned above. The last two tracts, amounting to a total of 21,078 acres, are adjacent and will be reclaimed by the Big Horn Colonization Company, through the Sidon Canal. Work was begun on this canal in May, 1900, and is being pushed rapidly to completion. There is no doubt but that all the lands susceptible of irrigation under this canal will be reclaimed prior to August 18th, 1904, when operations under the Carey Act expire by limitation.

There is also every reason to believe that the several smaller tracts above mentioned will have been reclaimed, or be fully prepared for reclamation, as the law requires, before the expiration of the time limit.

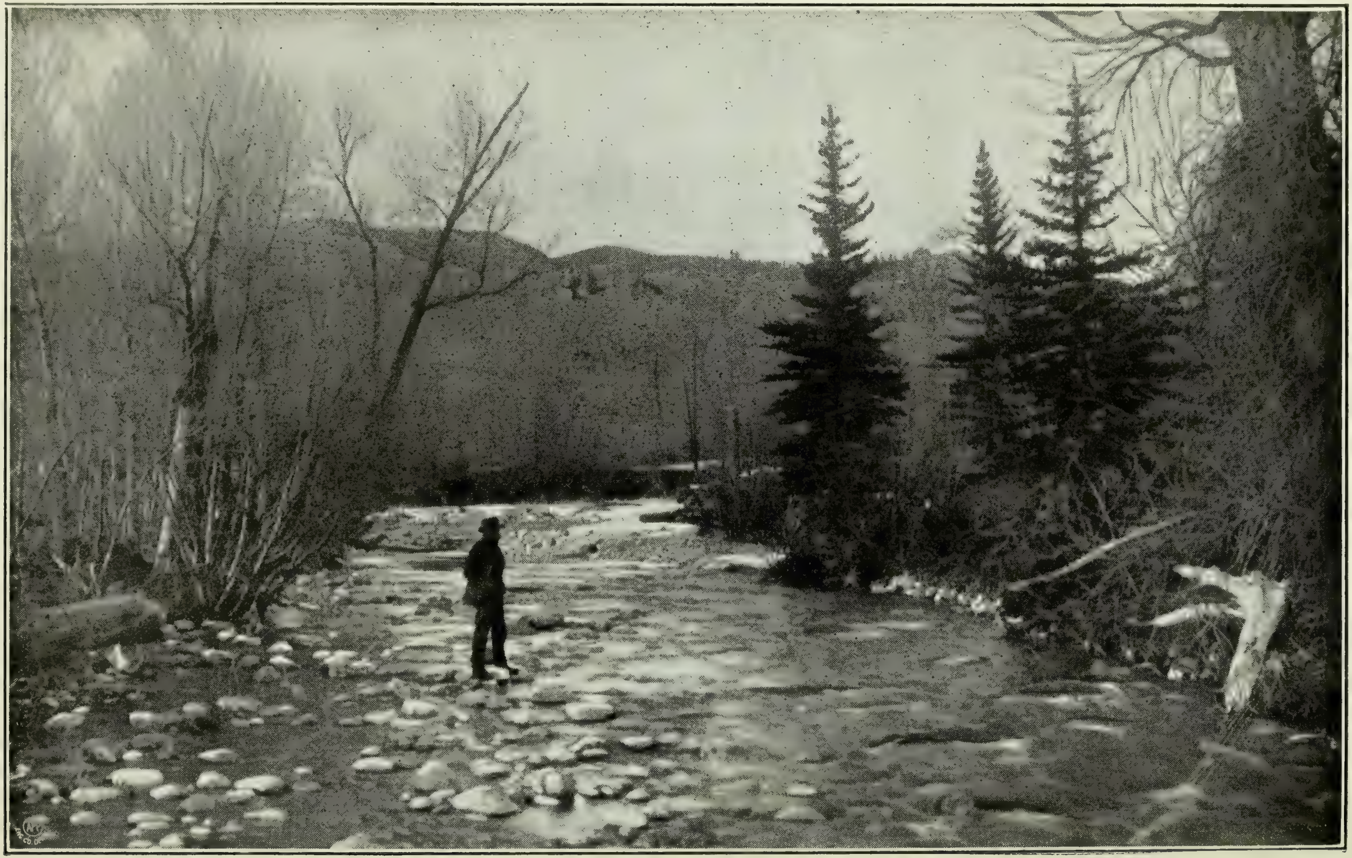
As to the 79,000 acres under the Cody & Salisbury Canal, persistent effort supported by sufficient capital to keep a large force at work during seasonable weather, can put this project in condition for official inspection by August, 1904, but no report has as yet been received on the volume of work accomplished during the season.

The reclamation of these lands can only be secured by the expenditure of a large amount of capital. They are therefore beyond the reach of the settler or any possible combination of settlers. On this account this undertaking and others of like magnitude should be given ample time in which to make a success of the work. The operation of the Carey Act should be extended twenty years beyond the present limit, as it is believed that such extension can injure no interests, but on the other hand, will be a much needed encouragement to reclamation on a scale soon to be found necessary.

That the Carey law has not as yet been productive of large reclamation of lands in this State may be admitted without in any way reflecting on that law as an incentive and encouragement to those who would build canals. It protects the canal builder as well as the settler under the canal, and sparse settlement, with the consequent small demand for the products of irrigation farming has undoubtedly been the chief factor in deterring undertakings under this law.

Small ditches constructed, owned and operated by the individual for the irrigation of the homestead, or desert entry, are so absolutely the rule as to be almost without exception. All the irrigable lands cannot, however, be reclaimed by the small ditch. There are many fine tracts of land of from 20,000 to 100,000 acres each which can be reclaimed only through large expenditures of capital, and a law under which enterprises of this magnitude may be prosecuted, and which gives sufficient time for the work, should continue to hold a place in the U. S. Statutes.

The tract of 75,000 acres south of Ft. Steele, in Carbon County: the 200,000 acres along the Big Sandy River, in Sweetwater County; the 200,000 acres along the Powder River in Johnson County; the body of land of unknown extent, because



BRUSH CREEK, CARBON COUNTY.

not hitherto surveyed for irrigation, lying north of the Platte River in Natrona and Converse Counties, are examples of lands that can be reclaimed only through such expenditures of capital as put them beyond individual effort.

WATER RIGHT DECREE BY THE DISTRICT COURT.

This case was an action brought by the Little Horse Creek Irrigation Company for the purpose of preventing the defendants, George D. Johnston, et al., from diverting into their ditch water which the plaintiff claimed to have purchased from the Springvale Ditch Company.

The right of the Springvale Ditch Company was prior to that of the Johnstons, while the right of the Little Horse Creek Irrigation Company was a later right, and as the stream did not, at all times, furnish sufficient water for all appropriators, the Little Horse Creek Irrigation Company sought through this suit to establish the legality of a sale and so secure by purchase what it failed to secure by appropriation.

If the opinion handed down with the decree in this case is correctly apprehended, the Court holds the following:

1st. That the right to water is a vested right and its extent must be determined by the statutes in force at the time of the appropriation.

2nd. The right to the use of water was a property right, the title of which was vested in the appropriator and could be sold and disposed of as other property.

3rd. That a water right acquired for irrigation prior to the creation of the Board of Control may be used on any lands whatsoever, at the will of the appropriator.

4th. That an appropriation of water in an amount or volume not to exceed a certain defined limit, is in fact an appropriation complete and in full to that limit, regardless of the necessities of the soil.

In consideration of the fact that the doctrine and decrees of the Board of Control during ten years' administration of the water laws, so far as the same relate to private ownership of water, are overthrown by this decree if the same shall stand, a presentation of such portion of the laws under which the appropriation of the Springvale Ditch Company was made as have any bearing on the ownership of the water and limitations as to the land, together with the decree of the Board in this case, will be of interest. Preliminary to this it may be stated that the Board has, at all times, held that our laws make no provision for the sale of water: that the laws nowhere recognize private ownership in water or its use, that in the absence of legislation recognizing private ownership and authorizing the sale of water or the sale of its use, it has been the intent of our lawmakers to sanction neither. The Board has, therefore, uniformly held that there is no such thing as private ownership either in water or the use of it, and that the appropriator being entitled to the use only of that for which he pays nothing, is in effect and in fact a recipient of the State's bounty to the extent of the value of whatever may accrue to him out of this free use, and that he is therefore no more entitled to dispose of the property of the State or its use at a profit to himself, than the mere user of any other kind of property, the use of which was granted for a specific purpose, is entitled to sell or dispose of the same or its use without the consent of the owner.

The first territorial law was enacted in 1875 and those sections having any bearing on the ownership of water or limitations as to land are as follows:

> Sec. 1. All persons who claim, own or hold a possessory right, or title to any land or parcel of land, within the boundary of Wyoming Territory, when those claims are on the bank, margin or neighborhood of any stream of water, creek or river, for the purpose of irrigation and making said claim available to the full extent of the soil, for agricultural purposes.
>
> Sec. 4. In case the volume of water in said stream, creek or river, shall not be sufficient to supply the continual wants of the entire country through which it passes, then the County Commissioners of the County shall appoint three commissioners, as hereinafter provided, whose duty it shall be to apportion, in a just and equitable proportion, a certain amount of said water, upon certain or alternate weekly days to different localities, as they may, in their judgment, think best for the interest of all parties concerned, and with a due regard to the legal rights of all.

Section 1 establishes the following:

1st. That only the use of water was recognized.

2nd. That this use was for the claim to which the owner had a possessory right or title.

3rd. It limits the appropriation of this claim to the requirements of the soil.

It has appeared to the Board that neither by direction or inference is authority granted to the appropriator for any purpose whatever other than to use the water for the claim he owns, and this to the extent of the necessities of the soil only. The appropriation is authorized for the purpose of making his claim available for agricultural purposes and, in the judgment of the Board, it limits the use to that claim.

Section 4 appears, very clearly, to provide for the arbitrary dispossession, without compensation, of any part or proportion, falling short of the whole, of any claim to the use of water, and its transfer to others having an insufficient supply, by a commission, appointed under authority of law for this purpose. Such a provision has appeared to the Board as incompatible with any recognition of private ownership in the water secured by virtue of the appropriation.

The law of 1884 succeeded that of 1875 but did not repeal any of its provisions. It was therefore an addition to the water

Erratum.—Section 1 on opposite page should read as follows:

Section 1. All persons who claim, own or hold a possessory right, or title, to any land or parcel of land, within the boundary of Wyoming Territory, when those claims are on the bank, margin, or neighborhood, of any stream of water, creek, or river, shall be entitled to the use of the water of said stream, creek, or river, for the purposes of irrigation, and making said claim available, to the full extent of the soil, for agricultural purposes.

give the preference to the use of the water in said ditch or ditches to the class or persons so named in the certificate; the rates at which water shall be furnished to be fixed by the county comany bearing on the ownership of the water and limitations as to the land, together with the decree of the Board in this case, will be of interest. Preliminary to this it may be stated that the Board has, at all times, held that our laws make no provision for the sale of water; that the laws nowhere recognize private ownership in water or its use, that in the absence of legislation recognizing private ownership and authorizing the sale of water or the sale of its use, it has been the intent of our lawmakers to sanction neither. The Board has, therefore, uniformly held that there is no such thing as private ownership either in water or the use of it, and that the appropriator being entitled to the use only of that for which he pays nothing, is in effect and in fact a recipient of the State's bounty to the extent of the value of whatever may accrue to him out of this free use, and that he is therefore no more entitled to dispose of the property of the State or its use at a profit to himself, than the mere user of any other kind of property, the use of which was granted for a specific purpose, is entitled to sell or dispose of the same or its use without the consent of the owner.

[illegible]

1st. That only the use of water was recognized.

2nd. That this use was for the claim to which the owner had a possessory right or title.

3rd. It limits the appropriation of this claim to the requirements of the soil.

It has appeared to the Board that neither by direction or inference is authority granted to the appropriator for any purpose whatever other than to use the water for the claim he owns, and this to the extent of the necessities of the soil only. The appropriation is authorized for the purpose of making his claim available for agricultural purposes and, in the judgment of the Board, it limits the use to that claim.

Section 4 appears, very clearly, to provide for the arbitrary dispossession, without compensation, of any part or proportion, falling short of the whole, of any claim to the use of water, and its transfer to others having an insufficient supply, by a commission, appointed under authority of law for this purpose. Such a provision has appeared to the Board as incompatible with any recognition of private ownership in the water secured by virtue of the appropriation.

The law of 1884 succeeded that of 1875 but did not repeal any of its provisions. It was therefore an addition to the water law already in force, the law of 1875 being in no way interfered with or affected by the new statute. It was in fact an amendment to "An Act to create and regulate corporations." The only sections having any bearing on the question of ownership of water are as follows:

Sec. 28. Whenever any three or more persons associate under the provisions of this article to form a company for the purpose of constructing a ditch or ditches for the purpose of conveying water to any mines, mills or lands, to be used for mining, milling or irrigation of lands, they shall in their certificate, in addition to the matters required in section one of this article, specify as follows: The stream or streams from which the water is to be taken; the point or place on said stream at or near which the water is to be taken out; the line of said ditch or ditches as near as may be, and the use to which said water is intended to be applied.

Sec. 30. Any company constructing a ditch or ditches under the provisions of this article shall furnish water in the way named in the certificate as the way the water is designated to be used, whether miners, mill men or farmers, whenever they shall have water in their ditch or ditches unsold, and shall at all times give the preference to the use of the water in said ditch or ditches to the class or persons so named in the certificate; the rates at which water shall be furnished to be fixed by the county commissioners or the tribunal transacting county business as soon as such ditch or ditches shall be completed and prepared to furnish water.

Section 28 is quoted to show that the law was enacted for the purpose of requiring certain things of a company formed for the purpose of conveying water and that the law did not apply to any company organized for any other purpose.

In section 30, however, the word "unsold" appears, but not in connection with any preceding or following provision authorizing the sale of water. From the careful avoidance of any expression calculated to show that the sale of water was intended to be authorized, and on the contrary, the using of terms which merely authorized the conveying of water by companies organized for that purpose, it appeared to the Board that the sale of water or the recognition of private ownership in water was not intended. The fact that the law of 1875 was not repealed at this time appeared to greatly strengthen the contention that the Legislature of 1884 did not intend to enact a law inconsistent with any then in force relating to water. "Shall furnish water," "the rates at which it shall be furnished," and "shall be completed and prepared to furnish water," are the expressions used in the section, wherever the duties of the ditch company are set forth. When these expressions, together with Section 28, are considered in connection with the law of 1875, which as before stated did not even recognize the right to use the volume appropriated, if by so doing interference was had with the appropriations of others, the position of the Board appeared to be based upon a reasonable interpretation of the law.

The decree of the Board granting the use of water to the Springvale Ditch Company is as follows:

> That Springvale Ditch Company by reason of the construction of the Springvale Ditch and the beneficial use of water for irrigation is entitled to sufficient water from Little Horse Creek to irrigate 700 acres of land. The same being in section 20; the N. W. ¼ section 21; N. ½ S. W. ¼; S. W. ¼ of S. W. ¼ section 21; E. ½ sec. 19; S. W. ¼ sec. 19; N. ½ of N. W. ¼ sec. 30; N. ½ of sec. 29; S. ½ S. ½ sec. 17; S. ½ of S. W. ¼ sec. 16; Twp. 18 N., R. 62 W., in an amount not to exceed one cubic foot per second of time for each seventy acres so irrigated. Said appropriation dates from February, 1884, and the right of said Springvale Ditch Company to the use of water from said

Little Horse Creek through said Springvale Ditch for the purpose aforesaid is prior and superior to any other right to the use of water from said creek, except as above stated.

It is therefore considered, ordered, adjudged and decreed by the Board that said Springvale Ditch Company do have the use of water from said Little Horse Creek for the irrigation of 700 acres of land; and for said purpose said Springvale Ditch Company to have water from said Little Horse Creek to the amount of ten (10) cubic feet of water per second of time, and that the right of said Springvale Ditch Company to the use of water to the amount and for the purpose aforesaid is prior to and superior to any other right to the use of water for beneficial purposes from said creek, except as above ordered and decreed.

A careful perusal of this decree shows: 1st. That the appropriation dates from February, 1884. 2nd. That the appropriation is made for the beneficial use of sufficient water, to the amount of ten cubic feet per second of time, to irrigate 700 acres of land, and the land is enumerated. 3rd. There is nothing in the decree authorizing the use of any more water than just the amount necessary for this irrigation, nor does it state what that amount is. 4th. The Springvale Ditch Company was not decreed the use of ten cubic feet per second of time, nor was it given the use of any other specific number of feet of water whatever, but it was decreed the use of water to irrigate 700 acres of land, "in an amount not to exceed one cubic foot of water per second of time for each seventy acres of land irrigated." In the view of the Board, there is a vast difference between granting the use of a flow of ten cubic feet per second of time outright and regardless of use, and granting a sufficient flow to irrigate 700 acres of land. The wording of the decree shows this conclusively. The Board did not undertake to designate the exact amount of water needed by the Springvale Ditch Company to irrigate its 700 acres of land. In fact it did not know; but the actual volume required seems to be clearly indicated in the deed of record transferring the full ten cubic feet per second to the Little Horse Creek Irrigation Company for its use during each alternate week throughout the irrigating season. A flow of ten cubic feet per second for each alternate week is exactly equivalent to a continuous flow of five cubic feet per second and if, as appears, the latter volume irrigated the lands of the Springvale Ditch Company, then the decree of the Board to that company was five cubic feet per second of time and no more.

Had the Board determined the extent of a water right wholly by the statutes in force at the time of the appropriation, the appropriator between 1875 and 1884 would only be entitled to such a volume of water as his individual diversion bore to the whole amount appropriated from the stream; while the appropriator after the latter date would be entitled to the full volume diverted by him and applied to a beneficial use and would be affected only by his priority. The consequent confusion and impossibility of administration which would have followed a decree based solely upon the laws in force at the time of appropriation led to the adoption of *the date of the appropriation*, *the volume of the appropriation*, *the purpose for which it was made and whether or not it had been continuous*, as important factors to be considered in the determination of a water right.

REPORT OF STREAM GAUGINGS AND INVESTIGATION OF THE WATER SUPPLY.

By A. J. PARSHALL, Assistant Engineer.

During the past two years the Assistant Engineer has given the greater part of his time during each irrigation season to the gauging of streams, looking after the observation stations and keeping records of their discharge.

Stations were maintained on the North Platte River at Orin, the Laramie River at Uva and Woods, on Clear Creek, Green River and Black's Fork during the year 1899.

At the close of that year the stations on Clear Creek, on Green River and on Laramie River at Uva were abandoned, they not being considered as important as formerly. The stations on the Laramie at Woods and on Black's Fork were continued, that at Orin transferred down the North Platte to Guernsey and new stations established at Peryam's on the Grand Encampment River and at Thermopolis on the Big Horn.

It has been thought wise to maintain at least two permanent gauging stations in the State upon streams which will best indicate the annual precipitation for a succession of years.

TABLE SHOWING MONTHLY AND SEASONAL FLOW IN ACRE FEET OF THE RIVERS ON WHICH GAUGING STATIONS WERE MAINTAINED FOR THE YEARS 1899 AND 1900.

STREAM	Year	April	May	June	July	August	September	TOTALS
Green River at Green River	1899	95,604	199,930	744,160	886,095	315,077	122,166	2,363,032
Laramie River at Uva	1899	57,994	71,676	160,954	94,276	12,425	3,279	400,604
Laramie River at Woods	1899	33,670	75,757	190,506	76,433	11,702	3,346	391,414
" " "	1900	7,439	119,121	105,296	6,801	3,075	2,629	244,359
Black's Fork at Granger	1899	53,321	140,708	278,343	111,771	24,671	10,944	620,258
" " "	1900	36,313	102,940	53,262	2,756	962	0	196,233
North Platte at Orin	1899	309,113	560,241	910,355	467,775	61,503	16:216	2,325,013
North Platte at Guernsey	1900			188,763*	93,213	27,106	5,029	314,116
Grand Encampment at Peryam's	1900		*46,865	104,435	9,365	5,188	3,812	169,665
Big Horn at Thermopolis	1900			588,354	288,354	167,666	* 44,609	1,088,957

* Fifteen days.

Thermopolis on the Big Horn and Guernsey on the North Platte seem to be the locations best calculated to give the desired results. At each of these points temporary stations have been established and records kept during the season just passed. The intention is now to make them more permanent in character and continue observations indefinitely.

Investigations will be made upon other streams as the work of this office progresses, and the information to be gained seems important. Some of the streams upon which these records have been kept for a number of years, and until the purposes for which they were intended have been accomplished, will be abandoned.

In this manner it is hoped that in time a fairly reliable record will be had of the more important streams, which will be of great value to irrigators and those in charge of irrigation matters.

The years 1899 and 1900 furnish results, the extremes in the run-off of our rivers; the former the greatest for many years, and the latter the least, neither of which can be taken as a fair average in determining the annual flow.

A table showing the monthly and seasonal flow has been prepared and appears on the preceding page.

The U. S. Geological Survey has also rendered this office great assistance in extending its investigations, commenced some years ago, to determine the quantity and source of water supply of our principal streams, and such time as was not absolutely required in attending to our prescribed duties has been given to such work.

The Grand Encampment River was, until recently, almost unknown to the general public. Its waters were used unsparingly by the few settlers in its valley; but the development of so many great copper properties in the vicinity of its headwaters created a demand for new appropriations to an extent that made an investigation as to its actual flow a necessity.

Owl Creek had, for a number of years, suffered from a water famine as the season advanced.

The supply of the Grey Bull River was fully appropriated, and yet the reclamation of lands for which permits had been granted had by no means been completed.

It being a season of unusually low water, complaints were

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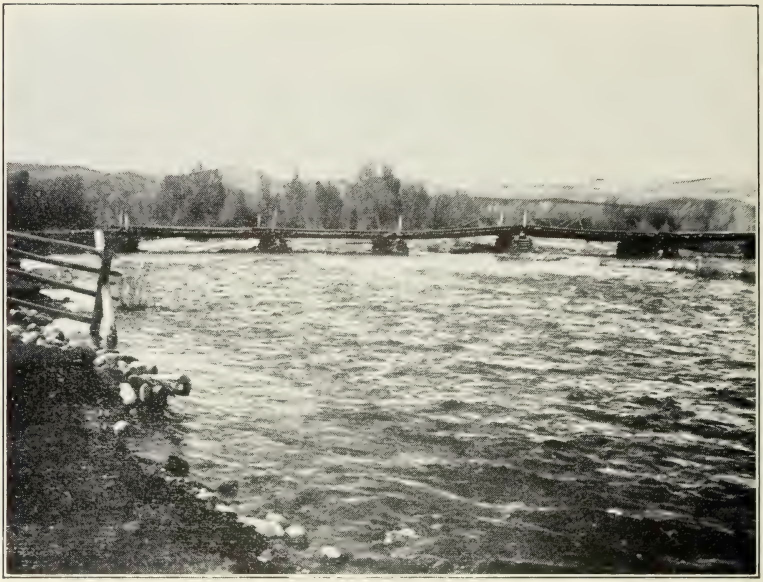


GRAND ENCAMPMENT RIVER, HIGH WATER.

GRAND ENCAMPMENT RIVER, LOW WATER.

numerous from many sections of the State. It was decided to make reconnaissance surveys of as many streams as possible and it is proposed to continue these surveys as rapidly as funds may be available, and the time can be spared from other duties.

GRAND ENCAMPMENT RIVER.

The Grand Encampment is one of the largest tributaries of the North Platte River, and has its source in the Sierra Madre Range of mountains south of the boundary line between Wyoming and Colorado. It is, however, practically a Wyoming river, accumulating its waters largely from small streams and springs on the Wyoming slope of that water-shed, an area now being brought into public notice by the discovery and development of so many large bodies of copper ore.

After leaving the foot-hills near its junction with the North Fork, it flows through a fertile valley about two miles in width, around and across which numerous large ditches have been constructed and tracts aggregating nearly 8,000 acres irrigated. A large portion of this is now under cultivation, a greater part being irrigated for native grasses, which grow luxuriantly, though at an elevation of over 7,000 feet.

The many new applications for permits to use water for mining, power, townsite and irrigation purposes have made it important that a more thorough knowledge of the discharge of the river be of record.

On May 6th, 1900, a gauging station was established at a point near Peryam's ranch, the gauge rod having been attached to the east pier of Mr. Peryam's bridge, and from that date daily observations, morning and evening, were taken until October 1st. Five discharge measurements were made at different stages of its flow and a table showing daily gauge heights and the total discharge for that period submitted, the maximum and minimum discharges of the stream being—

On May 29th,	4,685 second feet.
On September 2nd and 3rd,	10 second feet.

The minimum discharge at the station does not, however, represent the full amount carried at low water. On July 19th, 1900, assisted by W. T. Peryam, Jr., I measured the water flowing in the main channel of the Grand Encampment River above points of diversion, in the North Fork of the river, (which discharges into the main channel above station), and in the several ditches which take their supply from these streams above the station, with the following results:

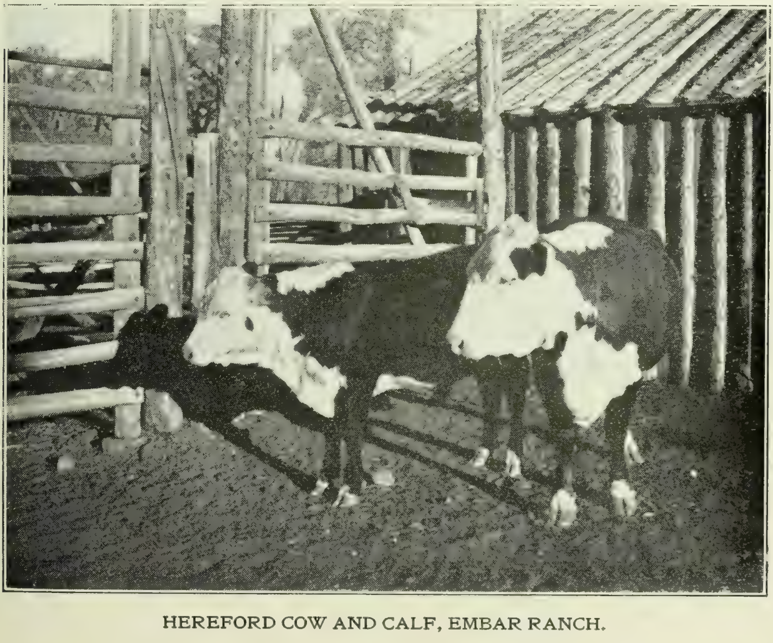
North Fork above diversion		24.3 Sec. Ft.
Nichols Ditch near headgate	4.9 Sec. Ft.	
Wolford Ditch near headgate	5.2 Sec. Ft.	
Townsite Ditch near headgate	2.4 Sec. Ft.	12.5 Sec. Ft.
Discharge into Grand Encampment River		11.8 Sec. Ft.
Grand Encampment River above diversion		117.3 Sec. Ft.
Whambaker Ditch near headgate	1.9 Sec. Ft.	
Parr Ditch near headgate	5.1 Sec. Ft.	
Wagoner Ditch near headgate	49.0 Sec. Ft.	
Mill Race Ditch near headgate	30.5 Sec. Ft.	
Peryam-Nichols Ditch near headgate	2.1 Sec. Ft.	
Grand Encampment River at station	33.8 Sec. Ft.	
Not accounted for	1.7 Sec. Ft.	
Total	129.1 Sec. Ft.	129.1 Sec. Ft.

A supply, notwithstanding that it has been a season of unusually small precipitation, quite sufficient for present requirements.

A RECONNAISSANCE OF OWL CREEK.

A low range of hills extending from the Washakie Needles, a prominent landmark at the intersection of the Owl Creek and Shoshone Mountain ranges, to a point on the Big Horn River between Basin and Alamo, forms a divide or water-shed, diverting the drainage on the south and east in a southeasterly course to the Big Horn River. Dry Cottonwood, Gooseberry, Meeyero and Owl creeks, with their numerous tributaries, are all important streams during the early months of each year, but supply little or no water for other than stock or domestic purposes later than July 15th. All of these creeks flow through valleys that would add largely to the agricultural area of the State, could the flood waters of the spring months be conserved for use at times when most needed, and all, with the possible exception of

BRANDING CATTLE AT EMBAR RANCH.



HEREFORD COW AND CALF, EMBAR RANCH.

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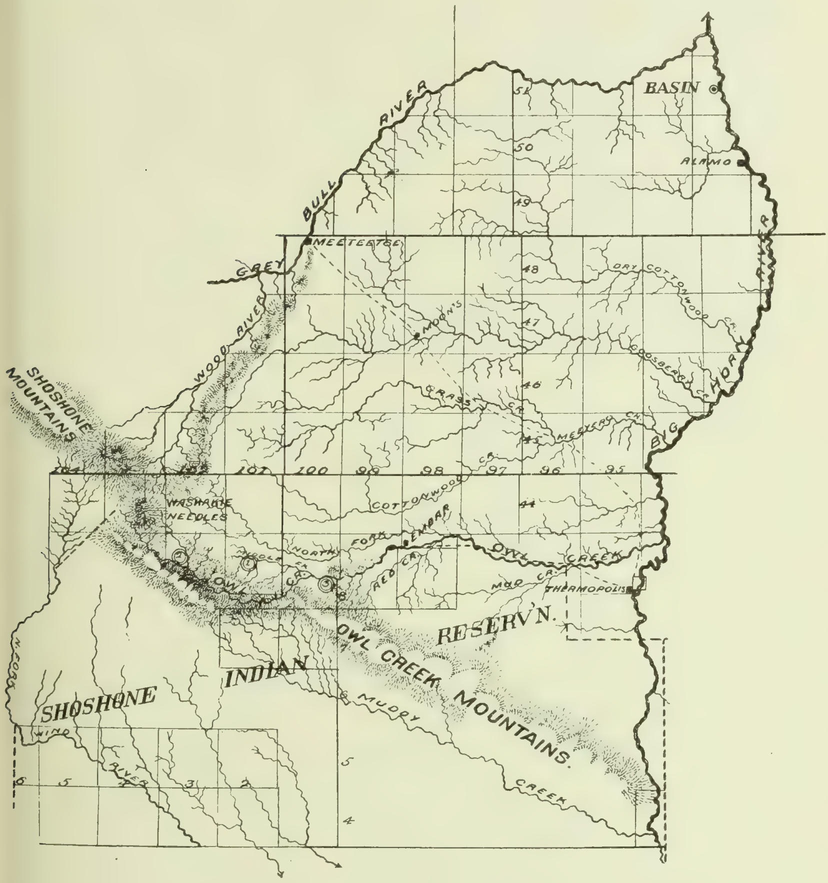
Owl Creek, seem to possess natural storage basins where water, sufficient for irrigating large tracts, could be stored at a reasonable cost.

Owl Creek, which marks the northern boundary line of the



OWL CREEK BASIN.

Shoshone Indian Reservation, is the largest and most important of these streams, having its source in the cañons and ravines about Washakie Needles, and running in an easterly direction, passing through the cañons of the Owl Creek Mountains, then through a valley of from one to five and even ten miles in width for a distance of nearly thirty miles until it empties into the Big Horn River.

The principal tributaries of Owl Creek are, on the north, the North Fork, a considerable stream, discharging from 1,000 to 2,000 second feet during flood season, after which a few hundred feet, gradually diminishing in quantity until after July 1st, when there is little or no moving water, and the Middle Fork, which is a flood-water stream, carrying no water after the spring freshets except the run-off after storms, but furnishing a large number of springs which serve as watering places for stock the whole year round.

On the south, Red Creek is a perpetual stream: so is Mud Creek, both draining the north slope of the Owl Creek Mountains, neither carrying large bodies of water during the spring freshets, but both furnishing a few feet of spring water during the dryest seasons.

Owl Creek was, perhaps, the first stream in the Big Horn Basin upon which permanent settlement was made, the Embar Cattle Company establishing their home ranch at what is now Embar, more than twenty years ago.

The soil of the bottom lands is rich and productive, the climate mild and the elevation ranging from 4,500 to 7,000 feet above sea-level. Varieties of vegetables and fruits are grown successfully which are not attempted elsewhere in the State, outside of the Big Horn Basin.

A number of well cultivated ranches are to be seen. producing largely hay and grain, stock-raising being the chief industry. Alfalfa thrives. At the Basin ranch of the Embar Company I found a field containing 500 acres, upon which two crops of alfalfa were harvested each year, and at several ranches fields of 100 acres and upwards in extent.

The water supply of the creek is almost entirely employed in irrigating cultivated lands, it being of too great value to be used on native grasses.

In the year 1899, the irrigating ditches upon Owl Creek and tributaries were surveyed, showing there had been constructed fifty-five miles of ditches, under which proof was made that 4,600 acres of land had been reclaimed and converted into farms. As much more land was found for which permits had been issued and where preparations were being made to reclaim under flood-water permits, which will enable settlers to use water until about July 1st, or until after their first crop of hay has been secured.

The natural productiveness of the soil, the fact that the water supply is now practically exhausted, and that there still remain from 20,000 to 30,000 acres of unoccupied lands which could be irrigated at little cost if water could be had, has led to the preliminary steps being taken in the way of investigating the water supply.

In August, 1899, and again in October, 1900, I made trips up Owl Creek and the Middle Fork for the purpose of ascertaining if it would be possible to impound the flood waters of these creeks to advantage and at a reasonable outlay. The reconnaissance extended from Embar, above which the valleys are narrow, to near the head of the streams where the mountains break into foot-hills.

In township 43 North, Range 101 West, Middle Fork passes through a narrow gorge between two ranges of hills, where a survey might prove the possibility of constructing a reservoir at a cost which would not be too great.

In Township 43, Range 102, where Owl Creek leaves the mountains, in the foot-hills, is a natural basin several square miles in extent, through which the creek runs, and where it is reinforced by the waters of several smaller streams draining the springs of the surrounding mountains; and while but little water, perhaps four or five second feet, was found in the channel twenty miles below, here the discharge was between thirty and forty second feet.

In leaving the basin the creek enters a cañon at the mouth of which it is from 150 to 200 feet wide; the walls are of solid rock rising perpendicularly sixty feet, at which point there is a small platform. From this height the rocky sides of the hills rise at an angle of about thirty degrees. At the mouth of the cañon the basin widens out in circular form, and at the sixty-foot elevation a level taken indicated that a dam of this height would back water for one-half a mile, and by raising the dam greater surface would be covered proportionately. How great the cost would be can be determined only by careful survey.

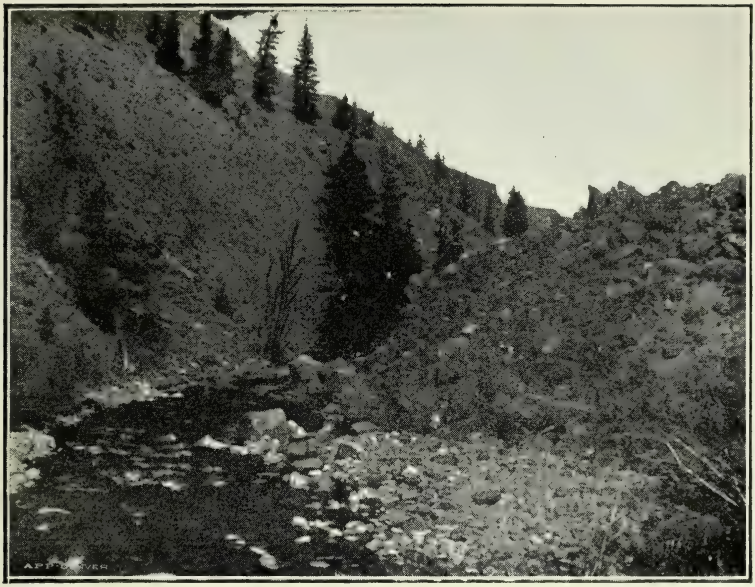
Rock work would not be expensive as an amount for any ordinary use is close at hand.

The distance through the cañon from this point to where the creek again enters the valley is in a direct line twelve or thirteen miles, but very much greater if the channel be followed. The walls are precipitous, in many places almost perpendicular, rising to a height of from 1,500 to 2,000 feet, and except at intervals when the sides are cut by ravines and gulches, the bed of the stream cannot be reached except by most dangerous climbing.

In October, 1900, I made an attempt to pass through the cañon. I gained the bed of the creek by descending a dry gulch about two miles below the upper basin, the gulch dropping probably 1,500 feet in less than a mile. I found that the channel carried, as I estimated its discharge, about thirty second feet of water, over a bed moderately free from boulders and which had been worn in time through an almost solid sandstone formation. Now and then there were rapids and falls where the water would drop five, ten and even twenty feet, and occasionally masses of rock fallen from above block or cover the stream to great heights. I found it impossible to proceed further than two or three miles along the channel and after a difficult climb reached the top of the walls, which I followed to a point a few miles above the mouth of Middle Fork, but was unable to discover any opening or basin where a reservoir would be feasible. About two miles below the mouth of Middle Fork, Owl Creek again enters a gorge between two rocky points of a mountain spur, which seems a practicable site for a reservoir if it should be found, after a survey, that the expense would be justified.

OTHER SOURCES OF WATER SUPPLY.

There are two other plans for obtaining a water supply to be considered. First, that of carrying by ditch from the creek to some large natural basin, which seems feasible to one in passing over the country, and second, the turning of North Fork of Wind River into Owl Creek. Whether the latter is feasible or can be done at any cost I am unable to say. But I believe the cost of a survey, as well as a survey of the several reservoir sites above mentioned, would be money well expended.



DAM SITE, UPPER GREY BULL RIVER.

ANOTHER VIEW OF DAM SITE, GREY BULL RIVER.

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GREY BULL RIVER.

The Grey Bull River, next to the Shoshone, is the largest tributary of the Big Horn and has its source near the summit of the main range of the Rocky Mountains, within a few miles of the headwaters of the Yellowstone, Snake and Wind rivers. With its numerous tributaries, of which Wood River is the most important, it drains an area of over 1,000 square miles, including a region containing the highest mountain ranges within the State, upon whose summits and heavily timbered slopes the melting snow, which never entirely disappears, furnishes a perpetual supply of running water of considerable volume.

The fall of the river, through the mountains, is very great, in many places exceeding one hundred feet to the mile, until near its junction with Piney Creek, where it leaves the cañon, and from this point the descent will average about fifty feet to the mile for the next fifty miles.

At the mouth of Piney Creek is the first settlement on Grey Bull. Here the valley is perhaps one-half a mile wide and broadens out gradually until Fenton is passed, where the water is carried in irrigation ditches on either side over a valley twenty miles in width.

On no large stream in Wyoming have the waters been more thoroughly utilized or the irrigated area so largely cultivated as here. The banks of the river are not high, and its rapid fall has enabled the irrigator to turn water upon the land at little cost. A recent survey shows 360 miles of ditches and canals constructed and in use—with many more in course of construction—furnishing water for 35,000 acres of land, a greater part of which is cultivated.

The water supply of the ordinary season is fully appropriated, and the problem is no longer to find settlers for vacant, irrigable lands, but to provide water for those who have settled upon the land without an adequate supply, as well as an amount to irrigate as much as may be of the many thousand acres contiguous—the best in the State— for which there is no supply.

The Grey Bull, during the spring and early summer months, discharges a great volume of surplus water, and it is believed that a careful survey will demonstrate that several feasible reservoir sites, of considerable capacity, are to be found at its headwaters, as also on Wood River and Rawhide and Meeteetse creeks.

In November, 1899, through the courtesy of Col. W. D. Pickett and Mr. Nathan Rush, who have been residents for many years on the upper Grey Bull, and who have become thoroughly acquainted with all that mountainous country east of the Yellowstone National Park in which the river and its many tributaries have their source, I was enabled to make a hurried trip through the lower cañons to a basin which they had informed me possessed many natural advantages for impounding water at a moderate cost. The lateness of the season precluded the possibility of my making a survey at that time, but a few observations with a level showed that the stream had less fall than I had found at any point below for more than fifty miles. The width of the valley I estimated to be from one-quarter to one-half mile, the greater part of it smooth and level, as was proven by the fact that the river had no well defined channel but changed its bed, plowing its way from one side of the valley to the other during high water, and from year to year. The lower end of the basin was reasonably narrow, the quantity and quality of material required for use in the construction of a dam were abundant and near at hand. The expense of a survey seemed warranted.

In the latter part of September, 1900, I outfitted at Fourbear, where I procured the services of a rodman, packer and pack-train. A fall of about twelve inches of snow during the night before we were to start prevented our taking the trail through the cañon, by which route the distance is only about fifteen miles. The character of the trail is such as would make it an unnecessarily hazardous undertaking when covered with snow. Our course was in a southwesterly, then northwesterly direction, over two mountain ranges, a circuitous journey of twenty-five miles to the basin, which is located on that strip of unsurveyed lands between the 13th guide meridian and the east line of the Yellowstone Park Timber Reservation in a direct line, a little south of west, ten miles distant from Fourbear (as it is shown on the map of Wyoming published by the Interior Department.)

Owing to the depth of the snow at the higher points (it had now disappeared in the valleys) and the great distance to any known Government corner, no attempt was made to ascertain our exact geographical location.

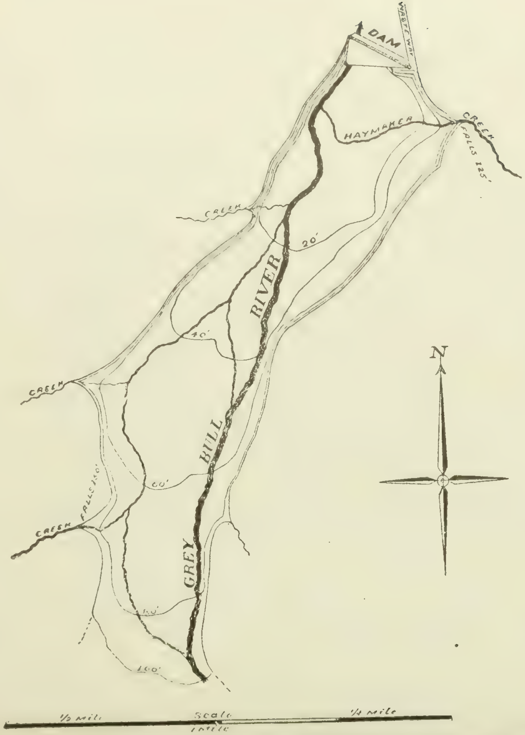
At the lower extremity of the basin, where it narrows down to enter the cañon, is an immense deposit of perhaps forty acres in extent, of broken, ragged porphyritic rocks, varying in size from those of a few pounds in weight to those weighing a hundred tons or more. They extend from the river channel, where they are piled up from thirty to fifty feet high, back to the cliffs on the east, where the height of this peculiar deposit is not less than two hundred feet. The southern line is a veritable stone wall, very steep in places and forming an angle of about eighty degrees with the stream and western walls. Along the southern line of this moraine is the site chosen for the dam. A natural wasteway (see plate) which only required the removal of a limited amount of rock to give it capacity to carry off surplus flood waters, at an elevation of ninety-eight feet above the present water line, determined the height to which, in my judgment, the dam could be most economically built. From this height as an initial point and high water line the survey was made.

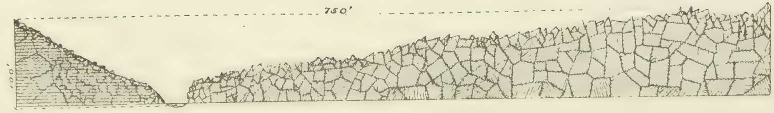
The ease with which rock could be handled by means of a derrick, or by a chute from the greater heights, as well as the vast quantity of that material so well calculated for that purpose, persuaded me to recommend its use as largely as possible, if work should be undertaken.

Earth, to be used in reinforcing and adding to the stability of the structure, is not wanting. The tract of land north of Haymaker Creek (see map) and between it and the moraine is comparatively free from boulders and can be handled to advantage at very low cost. The material which will have to be brought in from the outside is cement, for use in the masonry work of the sluiceway, and iron sluice-gates and tower, the total cost of which need not exceed one thousand dollars.

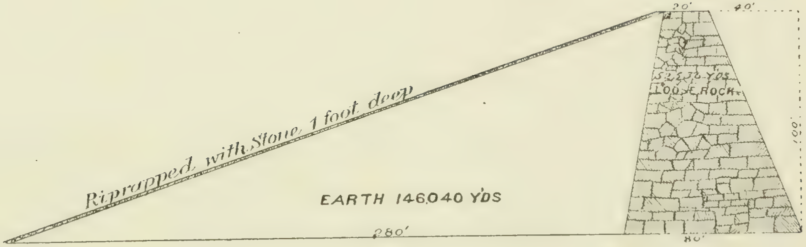
ESTIMATES.

Superficial Area	256 Acres.
Capacity	14,024 Acre Feet.





CROSS SECTION OF DAM SITE



CROSS SECTION OF DAM

MAP OF RESERVOIR SITE AND PLAN OF DAM ON THE UPPER GREY BULL RIVER.

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BLACK'S FORK CANAL AT TOWN'S RANCH.

HAM'S FORK, ONE MILE ABOVE MOUTH.

COST OF CONSTRUCTION.

146,040 cubic yards earth at 15 cts.	$21,906
52,536 cubic yards rock at 40 cts.	21,014
715 cubic yards masonry at $7	5,005
4,149 square yards rip-rapping at 25 cts.	1,037
Two three-foot sluice-gates at $250	500
Iron for tower	500
Total	$49,962

BLACK'S FORK DISTRICT.

Black's Fork and its numerous tributaries drain the extreme southwestern portion of Wyoming into Green River. Ham's Fork and the two Muddys on the north rise in the Sublette Range and the Bear River Divide respectively; while Black's Fork proper, and Smith's Fork, its only important tributary on the south, have their source in the Uintah Mountains, south of the southern line of Wyoming, in Utah.

Below the point where Ham's Fork joins Black's Fork, but little has been done in the way of irrigation. This is also true of Black's Fork as far up as its junction with Smith's Fork, so that in adjudicating these streams Black's and Smith's Forks are considered a system separate from the others.

In this valley are found the oldest ditches in the State, some of which are still in use, though nearly ruined by the thick growth of willows which have overgrown their banks and the land adjoining. In 1854, the Mormons established a supply station some miles above Fort Bridger, where a flour mill was erected, and where farming was evidently carried on, on a small scale. Several hundred families have settled in the valleys, and ditches are taken out of all the streams far up into the foothills, irrigating a great number of small tracts on either side in the narrow valleys, covering in all perhaps 15,000 acres.

Further down several large canals carry water upon the higher lands; the largest of which is the Black's Fork Canal, which has a capacity of nearly 100 second feet, and which carries water upon the low plateau between Black's and Smith's Fork, in Townships 15 and 16 North, Ranges 114 and 115 West.

For a number of years complaints have been frequent of the over-appropriation of the water supply, notwithstanding none but flood-water permits have been granted by the State Engineer for new appropriations. The conditions, as they really existed, were difficult to discover.

On July 26th, 1900, I visited and made measurements near the headwaters of Black's Fork above the point where ditches were in use. Here the stream was running in three distinct channels, discharging respectively 62.8, 1.3 and 7 cubic feet per second, or 71.1 second feet in all.

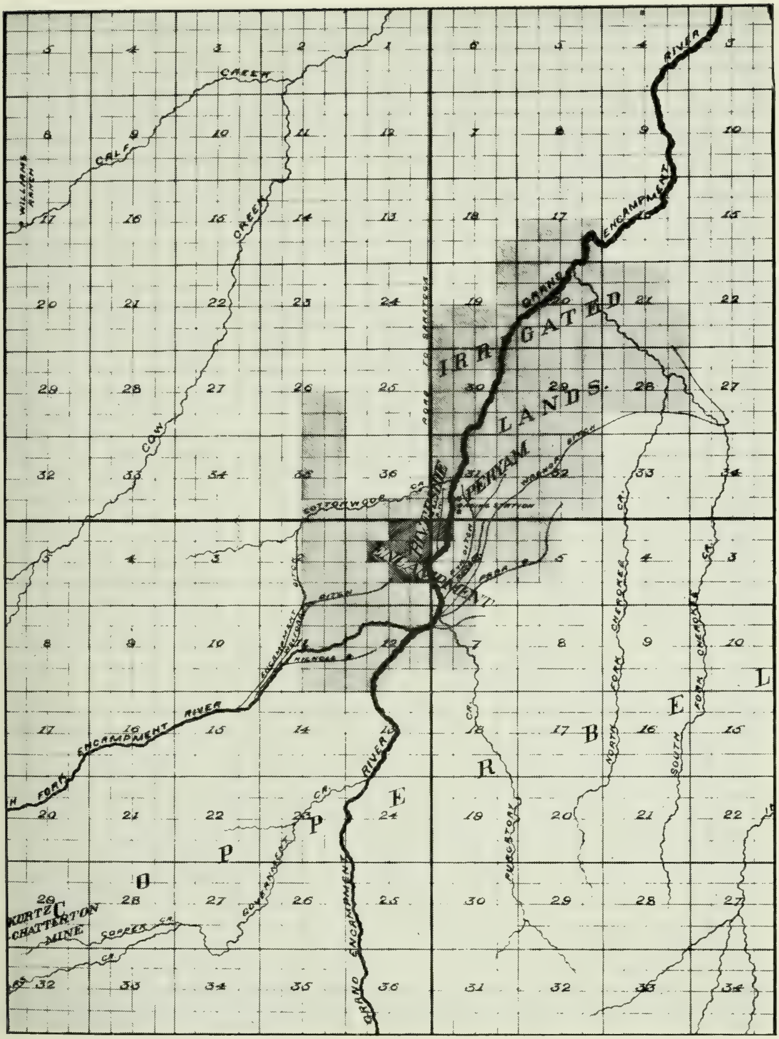
On the following day I measured Smith's Fork above points of diversion, where I found five distinct channels carrying respectively 4.1, 9.14, 1.5, 2.93 and 5.4 second feet, a total of 19.38 second feet. The same day at Mountainview on Smith's Fork 3 second feet was found in the channel, while a few miles below all water had been taken from the stream by small ditches.

At old Fort Bridger Black's Fork was also dry. A measurement was made of the volume running in the Black's Fork Canal at a point south of Fort Bridger and the discharge was 41.9 second feet. Other ditches carrying considerable water were passed but not measured. It was estimated, however, that no great amount was lost by sinking and it was evident that only a very small fraction of the water diverted from the stream found its way back into the original channel at any point above Fort Bridger; yet on July 28th, the day following, I measured the discharge of Ham's Fork at Granger (all other tributaries were dry) and found 20.66 second feet. A few hours later Black's Fork below Granger measured 26.8 feet, showing that at points below Fort Bridger 6.2 second feet had been taken up in some manner.

The importance of impounding a portion of the flood waters for use later in the season has long been recognized by the State authorities and during last August the officials of the U. S. Geological Survey sent a representative to visit the section of country adjacent to the headwaters of Black's and Smith's Forks for the purpose of making a reconnaissance of that region. What information was obtained has not been given to the public.

MODIFICATION OF GENERAL LAND OFFICE REQUIREMENTS.

In making proof of reclamation under the Desert Land Act entrymen were formerly required to furnish evidence of the pos-



GRAND ENCAMPMENT VALLEY.

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session of a permanent water right from the State, and the only evidence acceptable was a final certificate from the Board of Control.

On streams not yet adjudicated, the inability of the entrymen to comply with this requirement flooded this office with requests for relief, or, in lieu thereof, for such information as would, when presented to the General Land Office, afford the relief to which settlers were entitled. With the view of obtaining some change in the nature of the requirements or such modification as the situation would seem to demand, the following letter was directed to the Hon. Commissioner at Washington:

Cheyenne, Wyoming, August 14th, 1899.

Hon. Commissioner of the General Land Office,
Washington, D. C.

Sir—This office is in receipt of numerous requests, from appropriators of water who desire to prove up on desert lands, for the final certificates to which they are entitled after completing their appropriations according to law.

These requests are accompanied by a notice to the applicant from the register of some local land office, stating in effect that unless this final certificate of appropriation is furnished within the following sixty days, the entryman's claim will be held for cancellation. In these cases, the entryman has a duly recorded permit, under the laws of the State, to appropriate water, and if sufficient time has elapsed since that permit was issued, the strong presumption substantiated by his testimony before the register and receiver, is that he has complied with the law and is entitled to a final certificate of appropriation. Before this can be issued, however, he is required to make proof of appropriation before the properly constituted State authorities, over whose actions he has no control whatever. Under these conditions, the cancellation or holding for cancellation of the entry of a settler who has complied with the laws of the United States governing the entry and reclamation of desert lands, and, in addition thereto, has complied with the State laws controlling the appropriation and use of water, would appear to be working unnecessary hardship and to be a condition calling for some modification of departmental orders, or in lieu thereof, for such extension of time to the settler in which to furnish his final certificate as may be deemed proper and sufficient. Many of these settlers are greatly alarmed lest, notwithstanding their full compliance with both National and State laws, they are yet to lose their homes, and it is hoped that such action may be taken by your office regarding these final certificates as will not only reassure many whose all is in apparent jeopardy, but will, in addition to this, secure them against loss on account of unavoidable delay in official action over which they have no control.

I have the honor to be,
Yours very respectfully,
FRED BOND,
State Engineer.

The relief asked for was embodied in instructions to registers and receivers in this State, as appears by the following instructions:

DEPARTMENT OF THE INTERIOR.

GENERAL LAND OFFICE.

Washington, D. C., August 29th,1899.

Registers and Receivers in the State of Wyoming.

Gentlemen:—The regulations of this office require that—"persons making desert land entries must acquire a clear right to the use of sufficient water for the purpose of irrigating the whole of the land, and keeping it permanently irrigated."

Under the Constitution of Wyoming, sanctioned by Congress, the right to control and dispose of the waters of the State is reserved to the State, and under the Act of December 22nd. 1890. (Laws of Wyoming, 1890-'91, page 100), any person may divert waters for irrigation after having his application therefor approved by the State Engineer. Section 36 of that Act provides that when the proof of appropriation under such application has been furnished, the State Board of Control shall issue a certificate of appropriation thereon.

Heretofore, it has been the practice of this office to require a copy of this certificate to accompany each final proof as evidence of the legal appropriatiomn of the water used in reclamation, but it now appears that on account of the large amount of business pending before the State Engineer and the Board of Control it is impossible for them to furnish these certificates as fast as final proofs become due under the desert land law. This fact makes it necessary to alter the practice of requiring these certificates and compels the acceptance of other evidences of appropriation. Since the right of appropriation is given by law and may be exercised as soon as the application has been approved, it does not depend upon the issuance of the certificate. This certificate was not intended as a grant of a right, but was evidently devised as a convenient evidence or an easy method of proving a right which had already vested, and hence when it is impossible to furnish this certificate, the right of appropriation may be shown by other sufficient evidence.

You are therefore instructed to notify all entrymen who have been or shall be unable to furnish these certificates that their proof, if otherwise satisfactory, will be accepted upon the filing of a certified copy of their approved application, together with proof that they have completed the appropriation in the manner required by the State laws and regulations and properly reported that fact to the State Engineer, and this evidence will be taken as sufficiently establishing their clear right to the use of the water.

Very respectfully,
W. A. RICHARDS,
Acting Commissioner.

Under this ruling, the owner of a desert land entry, in making final proof of reclamation, is required to furnish the local land office with a statement from the State Engineer to the effect that the Engineer's office has received notice of the completion of the ditch and appropriation of water according to the terms and requirements of his permit, and that the same has been made a matter of record in his office.

A certified copy of the permit is also accepted as evidence of the possession of a permanent water right, providing it has endorsed thereon, by the State Engineer, the statement that the ditch has been completed and the appropriation of water made in accordance with the terms of the permit.

SELECTION OF STATE LANDS.

At the October meeting in 1899 and the March meeting of 1900, the Board of Control, sitting as a special land commission, selected 100,000 acres of land for the State.

These lands were selected in lieu of sections 16 and 36 in the Teton, Big Horn and Black Hills Forest Reserves, and no more than one section could be taken for one person.

Applications for over a half million acres were on file in the office of the Commission and, before beginning the selection of these lands, it was determined that as many as possible of the meritorious and deserving applications should be granted, up to the limit of the land available. Large numbers of the applicants desired only 160 acres each and, in nearly every one of these cases, an investigation showed that this selection was necessary and essential to the applicant's continued safety and profit in his ranch or farm business. Many were contented with eighty acres, some even with forty, and while many others asked for more land than could be selected for them without ignoring others who appeared equally entitled to consideration, the former were given a portion of what they desired, and the selection made in such a way as would afford the greatest amount of protection to the home and homestead.

Of the 100,000 acres selected, each Superintendent, on order of the Commission, was allowed one-fourth, or 25,000 acres for his Division. The results of these selections differ both as to the number of applications granted and the acreage selected for each, and are set forth in the following table:

DIVISION NO.	NO. SELECTIONS	AVERAGE ACRES EACH
1	91	275
2	94	266
3	65	385
4	51	490

The total number of selections made is 301, and the average for the whole State is 333 acres, a figure which demonstrates the intent and purpose of the Commission to distribute these lands among as many citizens as possible. Selections made in this way have another value not lost sight of by the Commission. The lands of the State are leased to numerous small holders, thus vastly increasing the possibilities of a perpetual and unbroken income therefrom accompanied with a reduction of taxation and an increase of school funds.

For the guidance of the Superintendents, in making other possible selections in the near future, the Commission at its meeting in October, 1900, unanimously adopted the following resolution:

Resolved by the Public Land Commission, that inasmuch as there are on file in this office applications for the selection of State lands, aggregating in acreage an amount vastly in excess of the lands available for selection, it is the sense of this Commission that every selection should be confined to as small a tract as possible, and that no selection for any one person shall exceed 320 acres, and the Superintendents are instructed accordingly.

The above resolution, embodying as it does the individual views of the members, was spread upon the records as an order of the Commission. It does not necessarily indicate that no more large tracts will be selected, but that large tracts will not be selected while the State has such limited areas to choose from, and so many applicants for them. The change in policy has been brought about by changed conditions. From the days when the Commission was obliged to go begging for lessees of State lands, when its offerings were in any amount up to 20,000 acres to one individual with only partial success, followed in some cases by repudiation, to the time when a resolution of the nature of the above is found necessary for the protection of both State and citizen, there has been a gradual but sure change of public sentiment in favor of State control of grazing lands. The opposition to the general proposition to lease the grazing lands comes from a part, but not all, of those who now graze the public lands free of cost. A large number of these can still see only injury to their interests in any proposition requiring pay, however small, for what is now obtained without expense. The business, however, is attractive because profitable, and the number of those engaging in it is being rapidly augmented, so rapidly, in fact, that the mind of a seer is not needed to foretell the day when those engaged in it will begin to interfere with each others' range. Indeed, this condition already exists in some parts of the State and whether, as it becomes more critical, it will force to the wall the weaker and least able to protect themselves, leaving the public domain to the enjoyment of the few and strong, depends entirely upon the prior discovery and adoption of some other solution of the problem. The large majority of those favoring leasing are, and always have been, found among the small ranchmen and farmers who have homes to protect and defend. The privilege of a certain amount of grazing land, adjacent to or near their irrigated holdings, is necessary to their continued well-being, and they have long since discovered that there is only one way by which it can be secured to them, and that is by paying for it.

Between these two conflicting interests, and as a direct result of their differences, National Irrigation Congresses and National Irrigation Associations are now ignoring the public grazing land question, and, for the time being, are devoting their time and energies to the solution of other problems. The determination of these other questions will not, however, solve this one, and long before the reservoirs are all built, "what to do with the grazing lands" will have become too acute a question for its solution to be longer delayed. What this solution will be may not now be foretold, but we may be certain that any outcome which involves the absorption and enjoyment of the public range by the few, thus preventing growth of population, will never be acceptable to the Wyoming people. This being set aside as one of the possibilities, it is difficult to conceive of any permanent division of the public lands which does not involve a legal control. Especially is this true among a class constantly changing, always increasing in numbers, and with interests which, through their growth, encourage encroachments on each other.

It would rather appear that the time is not far distant when these interests, which are now arrayed against land leasing, will, for their own protection and self-preservtion, be the strongest supporters of the movement.

WATER RIGHT DECISION BY THE SUPREME COURT.

This decision, rendered in May, 1900, settles a number of questions relating to the legal status and authority of the Board of Control and is, from a public standpoint, perhaps the most important ever handed down by that body.

The suit was instituted in the District Court of Johnson County for the purpose of determining whether or not the plaintiff had a right to use water from French Creek, although he did not submit proof in adjudication proceedings before the Board of Control, notwithstanding the fact that he had full notice of those proceedings. The questions reserved to the Supreme Court which were answered in the decision were in substance as follows:

1. Is the Board of Control constitutionally invested with judicial powers to adjudicate water rights under the statute?

2. Is the statute, itself, which confers this power, constitutional?

3. Is an appropriator, whose rights were acquired prior to the adoption of the Constitution, required to submit his claims to the Board for determination?

4. If he does not do so, is he therefore estopped by the findings of theBoard?

5, Does the service of notice upon claimants by mail constitute due process of law?

These questions were all answered affirmatively by the Court, with the exception of the fourth, where it was held that since the statute does not impose any penalty for failure to submit proof, nor any limitations upon a claimant from thereafter ascertaining his rights in the courts, he is not estopped from doing so where his rights had not been considered by the Board. The claimants are all required to submit their claims for adjudication and, in the absence of fraud, the decree of the Board will be conclusive both as to the general public and the parties participating in the proceedings.

While the Court held that a decree of the Board of Control is not necessarily a determination of all rights to the waters of the stream adjudicated therein, and gave a claimant liberty to ascertain and maintain his rights in the courts, in cases where his claims had not been determined by the Board, it also recognizes the value of a single proceeding to determine and settle water rights, in the following language:

> It is probably true that public and private interests will be more securely preserved by a determination in a single proceeding of the right and priorities of every existing claimant, and a law so framed to effectuate that object and render the decree conclusive of every accrued claim would doubtless subserve a useful and salutary purpose.

As forming a part of the dictum in this case and necessary for a clear understanding of the decision, the views of the Court were clearly set forth on some points heretofore determined. The definition of the word "appropriation" is one of these. and the meaning of the word, as defined by the Supreme Court in the case of Moyer vs. Preston, in 1896, is reaffirmed, but the definition is made more succinct and forcible. In the latter case (6 Wyo. 321) the Court said "To constitute an appropriation, there must exist not only an intent to take the water, but that intent must be accompanied or followed by some open physical demonstration, and there must ultimately be an application to some beneficial use. The initial act must also be followed up with reasonable diligence, and the purpose consummated without unnecessary delay in order that, by the doctrine of relation, the time of the appropriation may relate back to such initial proceeding." In the decision under comment, the language of the Court is not only terse and emphatic, but it is impossible of misconstruction. The Court says, "The appropriation consists in a diversion of the water by some adequate means and its application to a beneficial use." And again, "The title of an appropriator fastens not upon the water while flowing along its natural channel, but to the use of a limited amount thereof for beneficial purposes, in pursuance of an appropriation lawfully made and continued."

It was further decided that a right to water does not constitute any ownership in the water itself, but only in the right to use the amount appropriated, and that the ownership of the water itself is in the State.

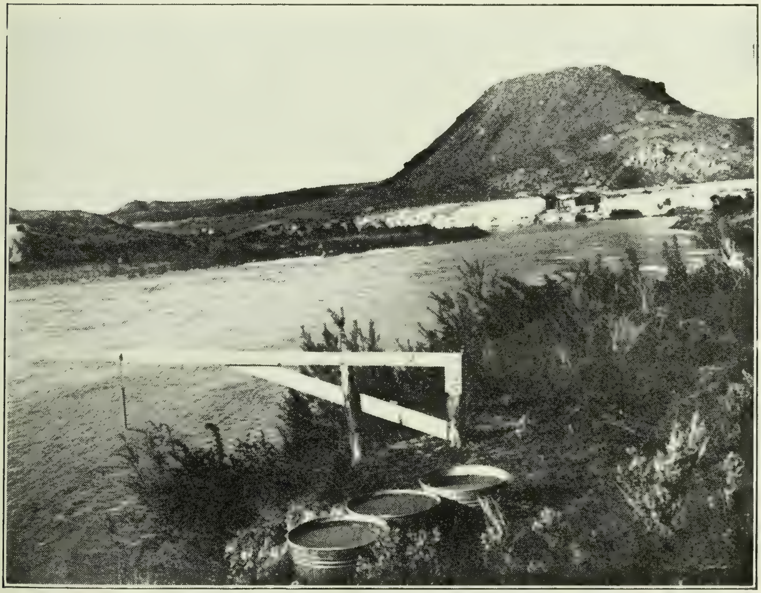
The passing upon the question as to whether the ownership and control of the waters of the State are or should be in the State itself, which has long been a theme for contention between those advocating public and those advocating private ownership, and its settlement to the best interests of all, is a subject for especial congratulation. The problem can now be relegated to those surrounding States which are still struggling to reach the high plane occupied by the Wyoming standard.

WORK OF THE BOARD OF CONTROL.

The determination of water rights, where the appropriation was made under permit from the Engineer's office, has been evenly distributed among the four water divisions. The determination of rights and priorities under territorial appropriations has been confined to Division No. 3, and comprises the adjudications of Owl Creek and tributaries, the diversions being entirely from the north bank of the stream and from tributaries flowing into it from that side, and Grey Bull River and tributaries complete.

On Owl Creek, the proofs of appropriation were taken by the Superintendent of Division No. 3, at Thermopolis, in 1899, and submitted to the Board in March, 1900. At this meeting the rights and priorities of twenty-seven appropriators, diverting water through twenty-six ditches, were determined and certificates therefor issued, The volume of water appropriated

GAUGING STATION ON NORTH PLATTE RIVER AT GUERNSEY.



GAUGING STATION ON BIG HORN RIVER AT THERMOPOLIS.

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was 65.71 cubic feet per second, for the irrigation of 4,600 acres of land.

The proofs of appropriation from the Grey Bull and tributaries was taken by the Superintendent in May, 1900, and submitted to the Board at its October meeting. The rights and priorities of two hundred and thirty-six appropriators, diverting water through one hundred and twenty-nine ditches and canals were determined. The volume of water appropriated is 499.9 cubic feet per second and the land reclaimed is 34,993 acres.

The proofs of appropriation of water from Laramie River and tributaries were taken by the Superintendent of Division No. 1, at Laramie and Wheatland, in May, 1900, but these have not yet been submitted to the Board for its action. An examination of the proofs submitted shows that claim is made to a total appropriation of 2,638.4 cubic feet per second, and that 184,688 acres of land have been irrigated and reclaimed. The large discrepancy between the gauged flow of this stream, extending through a term of years, and covering those in which proof of irrigation has been submitted, and the volume applied to the land as set forth in the proofs, is a matter for the thoughtful consideration of the Board when these proofs shall come before it for action.

The gauging station for the determination of the volume of water available for irrigation from this stream is located at Wood's Landing, above all ditches diverting water from the river.

An examination of the recorded daily flow for the months of June, July and August of each year for the past five years, is of much interest at this time and shows the following; the figures are in cubic feet per second:

YEAR	JUNE	JULY	AUGUST
1896	465	127	94
1897	1,524	316	113
1898	932	99	—
1899	3.207	1,255	191
1900	1,773	111	50

During the fourteen months whose record is here given, there was only one, viz., the month of June, 1899, when the flow exceeded the amount claimed to be appropriated. The average flow in the month of June, for the five years, is 1,584 second feet, or only sixty per cent. of the volume claimed, while the average flow for the month of July is 382 second feet, or fourteen per cent. of the flow claimed.

In his report for 1894, the State Engineer gives the average discharge of Laramie River during the irrigating seasons of 1889, 1890 and 1891 and from these, taken in connection with the character of the soil along that stream, draws the following conclusion:

"It is not believed, therefore, that the discharge of the Laramie River, at the point gauged, will suffice for the irrigation of more than 100,000 acres, but the measured volume is reinforced below by two important tributaries, the Little Laramie and Sybille Creek." Since 1894 the latter two streams have been entirely appropriated, with the possible exception of some flood water prior to the first of July, yet we now have proof of reclamation of 184,688 acres, nearly double the estimated possibilities at that time. One of two conclusions is unavoidable. Either the duty of water is from two to five times greater on the Laramie River water-shed than in other portions of the State, or proofs of appropriation covering large tracts of land, without application to beneficial use, have been submitted.

RECOMMENDATIONS.

The duty of the water commissioner consists in dividing the water in the natural streams in his District among the several appropriators according to the rights of each as determined by the Board of Control, and in prosecuting these duties in times of scarcity he is required to shut and fasten, under the direction of the Superintendent, such headgates as are not entitled to water by reason of the priority of the rights of others taking water from the same stream. Practically, his work is confined to the latter part of the irrigation season, as during the periods of plentiful supply the appropriators divert and use water without interference with each other. In times of low water, however, his duties become arduous, never particularly pleasant, and more frequently very disagreeable. The unpleasant features are enhanced, and the difficulties attending a successful management of the affairs of his office are increased, by a practice of that very conservatism which is essential to his greatest success.

It is obvious, therefore, that the selection of a good water commissioner requires the most careful consideration, but once having been found and induced to accept office, our laws should be so worded as to furnish every encouragement in the lawful prosecution of his duties that may be consistent with a fair and lawful distribution of water in his charge. They were so intended in the first place and, with few exceptions, learned by experience, have met all requirements. Among these is section 894 of the Revised Statutes. This section provides that commissioners shall not undertake the diversion of water according to the priorities until they have been called upon in writing by two or more owners or managers of ditches or persons controlling ditches in their respective districts. In like manner, Section 971 declares any person guilty of a misdemeanor who shall wilfully open, close or interfere with any headgate or water-box without authority, and provides a fine or imprisonment for infractions of this law.

The administration of the law has demonstrated a necessity for some changes in both of these sections. Referring to Section 894, there appears to be no good reason in law or in equity why one appropriator of water who has complied with all the requirements by constructing his ditch and reclaiming his land and who has, thereafter, built a home upon it, should not be protected in his rights to the full extent that two or more persons are protected. During the season just closed a railway company having the first right upon a certain stream was unable to secure joint action with some other appropriator for the reason, probably, that having first rights, the supply of all the others would be reduced by securing to the company what belonged to it.

In this particular case, recourse was had to the State Engineer and the necessary order issued. In districts remote from the railways, however, a call for the lawful diversion of adjudicated water is necessarily confined to the authority nearest at hand, and Section 894 should be so amended that a water commissioner shall begin his work at the written call of two or more appropriators and may begin at the written call of one appropriator if the reasons given in the call are deemed sufficient. It may be stated that the law was drawn as it now stands under the apprehension that calls for other reasons than those authorized by the law would be made. Experience, however, has shown that demands on the commissioner are not made without adequate reason therefor, at least in the mind of the appropriator, and it is believed that a change would be productive of better protection in certain cases.

The necessity for an amendment to Section 971 has been demonstrated by many failures to secure convictions even under the most flagrant violation of both the intent and wording of the statute. These cases have thus far been confined to the justices' courts, where it has been almost uniformly held that unless the State could prove, by eye-witnesses or other indisputable evidence, the opening of the headgate by the defendant, the latter must be discharged. Yet in all these cases the defendant was found using water appropriated by others, against the express orders of the commissioner in charge. These cases appear to be analogous to those of persons found in possession of stolen property, where such possession is regarded in law as prima facie evidence of the guilt of the person or persons in whose possession the property is found. Innocence in such cases is not presumed but must be proven. In like manner the possession and enjoyment of water which clearly belongs to a prior appropriator, the order of the commissioner relative thereto having been lawfully issued, should be punished as a misdemeanor unless the user can establish his innocence in the premises.

It is believed that a much better administration of the law can be secured by a change in this section as suggested above, and it is therefore recommended that Section 971 of the Revised Statutes be so amended that the possession and enjoyment of water, so unlawfully obtained, shall be prima facie evidence of the guilt of the person or persons using it.

In the decision of the Supreme Court respecting water rights, commented upon on another page of this report, the Court makes the following statement and suggestion: "It is probably true that public and private interests will be more securely preserved by a determination in a single proceeding of the right and priorities of every existing claimant; and a law so framed as to effectuate that object and render the decree conclusive of every accrued claim, would douubtless subserve a useful and salutary purpose."

All rights adjudicated by the Board of Control prior to that decision have been established on the assumption that this end was already attained and that any person who failed to appear and present his claim at the time of taking testimony was thereafter estopped from so doing. So it has been held by the Board that the person holding stream priority No. 1 was entitled to the first use of water from the stream; and that the person who held stream priority No. 2 was entitled to the second right, and so on through the entire list of appropriators, and the water commissioners have been so instructed and have diverted the waters according to these determinations. In addition to this, the claimants themselves have also considered their rights as finally settled, so that consequent unsettling of claims and values long established should not be permitted to prevail longer than is necessary to bring about a renewal of those stable conditions, thought previously to prevail. It is therefore recommended that the present law be so amended as to establish the following:

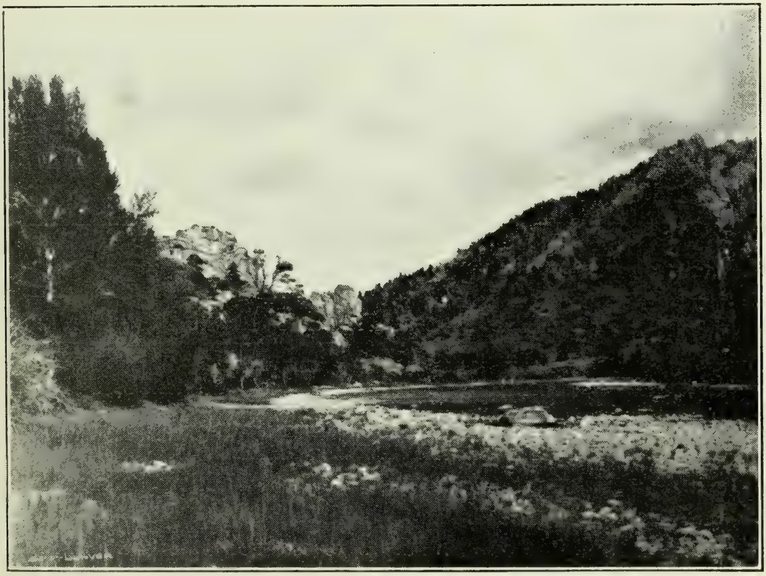
1st. That any person claiming the right to use the water of any stream heretofore adjudicated by the Board of Control, who failed to appear and submit proof of his claims to the Division Superintendent at the time of the adjudication of the waters of the stream from which his diversion is made, shall be allowed one year from the date of the act of amendment, herein contemplated, in which to file a petition for a re-hearing before the Division Superintendent, this re-hearing to be strictly confined to this class of claimants and be for the purpose of submitting his proof of appropriation as is done in the original instance, the same to be subject to contest, to applications for re-hearings and all the operations of the law covering original proofs and the actions of the Board of Control thereon.

2nd. That in adjudications of water rights, hereafter to be made by the Board of Control under the laws, any claimant of water who fails to appear and submit proofs of appropriation to and before the Division Superintendent at the time and place set and lawfully determined for taking these proofs, shall be deemed as having forfeited all rights theretofore claimed by him and he shall be forever estopped and concluded from any rights to water from the stream after the taking of said proofs, unless the same shall be acquired by subsequent appropriation under and by virtue of the State laws governing the acquirement of the use of the State's waters.

The latest requirement of the General Land Office in making proof of the reclamation of desert land involves the furnishing of either a certified copy of the permit under which the water appropriation was made, or a certificate from the State Engineer setting forth the fact that the records of the office show that such completion of ditch and appropriation of water has been made. For the former paper fees are now required, but there is no provision in the law for a fee for any certificate involving a statement as to a showing of the records in the Engineer's office. The law should provide for a fee of $1.00 to be charged by the State Engineer for a certificate of any kind that includes information as to the showing of the official records.

It is recommended that Section 930 of the Revised Statutes be so amended that the owner of a reservoir shall be required to construct and maintain, to the satisfaction of the Division Superintendent of the Division in which the reservoir is situated, a substantial and sufficient measuring device, of a plan to be approved by the State Engineer, in the channel of the stream across which the reservoir is located, both above and below such reservoir site, for the purpose of assisting the water commissioner or superintendent in determining the amount of water which shall be allowed to pass through the dam of such reservoir for the use of prior appropriators; and that upon failure to comply with the instructions of the Division Superintendent the construction shall be done by the County Commissioners and the costs made a charge upon the ditch, to be collected as delinquent taxes, as is also provided in Section 930 for the payment of the cost of construction of measuring devices in ditches. It should also be made the duty of the Water Commissioner to open and keep open the sluice-gate of the reservoir until the full payment of the costs by the owner of the reservoir has been made.

RESERVOIR SITE ON UPPER GREY BULL RIVER.



NORTH PLATTE RIVER AT BENNETT MOUNTAIN.

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REPORTS OF SUPERINTENDENTS.

Hon. Fred Bond,
State Engineer.

Sir:—As Superintendent of Water Division No. 1, I herewith submit my report of work in said Division for the two years ending November 30th, 1900.

For the year 1899, little besides routine work was accomplished or required. The most important work has been the adjudication of the rights to water from the Laramie River and its unadjudicated tributaries. This is the most important stream, in respect to the magnitude of the appropriations and number of ditches, in this Division. The fact of its being an interstate stream, having its inception in and by far its largest volume of supply from the State of Colorado renders it of special importance, especially in view of the fact that all its available natural flow, during the height and latter part of the irrigation season, is fully appropriated and applied to beneficial use in this State. A vast amount of available arable land lies along its margin to which no water has yet been applied, and under existing conditions it is not at all probable that any considerable portion of these lands can be reclaimed. This is due to the fact that during the time when water is most needed the very large diversion in Colorado diminishes the flow to such an extent that the lands now under cultivation and irrigation require all the available supply. Were it not for the fact that none of the water diverted by the above mentioned Colorado Canal is applied to use along this stream, but is all carried away into a totally different water-shed, the return seepage from the use of said water along the Laramie River would sufficiently augment its volume so that a very much larger area of land could be reclaimed than is now possible, and would also tend to render existing rights of more lasting value.

The testimony was taken by me in the months of May and June, at Laramie City and Wheatland, the proofs submitted showing the existence of 370 appropriations. By far the larger proportion of these are comparatively small ditches, but there are several very large and costly canals.

At the time of exhibiting the proofs for public inspection, a large number of contests were presented and filed. Some of these when heard will raise several very important and vital questions in our water laws and the practice of the Board of Control, not hitherto raised or determined, among the most important of which will be the relations or effect of our eixsting State laws upon the laws or customs and practice under the territorial period. As to whether an appropriation which had its inception under territorial laws is a continuing one down to the time when the adjudication was held: that is, whether the amount of an appropriation shall be determined and fixed by the number of acres found to be irrigated and reclaimed only up to the time of the adoption of the State law under the priority of the date when construction began on the ditch or whether it extends to and includes, under such priority, not only the lands watered during the territorial period but also those upon which water was not applied until after the State law went into effect, and is to be measured by the total number of acres watered down to the time of the submission of proof on the adjudication.

Section 918, Chapter 14, Division 1, Title 9, Revised Statutes, provides that "Any person, association or corporation hereafter intending to acquire the right to the beneficial use of the public waters of the State of Wyoming *shall before* commencing the construction of any ditch, canal or other distributing works or performing any work in connection with said construction or proposed appropriation make an application to the State Engineer for a permit to make such appropriation." And Section 929 provides "The priority of such appropriation shall date from the filing of the application in the State Engineer's office." The law seems to be perfectly clear and explicit that any extension of irrigated area after the adoption of the present laws must be under permit from the State Engineer, and take its priority as of the date of filing the same in the State Engineer's office. It follows then that the territorial appropriations must terminate and be governed in amount by the number of acres watered at the time the law above cited went into effect, and that any extension of irrigated area under such territorial ditches made subsequently must be governed by the same. This was the view taken by the Board of Control when it began its work. It has invariably since been adhered to, and has not hitherto been questioned. The proofs, however, of some of the largest appropriations from Laramie River take issue with the position of the Board, and the question will be fully presented and argued in the hearing of the contests. The testimony in the contests filed with me will be taken in the spring of next year, but it is not expected that the same can be taken in time for submission to the Board at its March meeting in 1901.

The necessity for field supervision and work during the irrigation season of 1900 has been considerable but owing to the very limited appropriation at my disposal, little of it could be properly attended to. Owing to the insufficient appropriation, I have not been able to take any proofs under permits in my Division and the consequent hardships have been much felt by appropriators who are desirous of proving up on their desert land entries, for which purpose they need their certificates of appropriation.

The resignation of the Water Commissioner in District No. 11 at the beginning of the irrigation season, and my inability to procure another man, made it necessary for me to confine what attention I was able to give to this District alone.

Muddy and Bates Creeks, in this District, were unusually short of water, and required and should have had almost constant supervision of a Water Commissioner during the irrigation season. The time I was able to give to them myself was wholly inadequate to properly supervise the distribution of water thereon. The conditions met with in this District, this year, demonstrated clearly the necessity for an amendment to our present law in regard to the regulation of headgates by Water Commissioners in times of shortage of water. The law makes it a misdemeanor to raise or interfere with a headgate which has been closed by the Commissioner, and he is authorized to arrest and prosecute any one so interfering. As the law now stands, it has been found impossible to procure a conviction unless the Commissioner actually saw the appropriator raise his headgate after it had been closed by authority. Since the time which the Commissioner is authorized to expend in any one season is limited, he cannot, after closing the headgates on a stream, patrol it to see that his orders are observed. It has been found that there are almost always some appropriators on a stream who will disregard the Commissioner's orders and as soon as he has gone resume the use of water through their ditches, thus rendering his action entirely nugatory, and those earlier priorities for the protection of which the Commissioner has closed later ones receive none of the benefits to which the law entitles them. Experience with some of the justices' courts has demonstrated the uselessness of having an appropriator arrested whose headgate is found open after having been closed under authority, unless the Commissioner actually saw him open it, notwithstanding the fact that he is found actually using the water on his land. In other words, the burden of proof is placed upon the Commissioner and he is required to show conclusively that the owner of such ditch actually opened the headgate. For the reasons stated above the Commissioner is unable to do this. The remedy would be to so amend the law that where a headgate has been legally closed by the Water Commissioner, and the same is subsequently found open without authority, and the owner using the water, this fact should be considered as prima facie evidence that the owner opened or caused the same to be opened and that the burden of proof be upon him to show that he did not so open it. Another serious difficulty in the proper administration of the law is the absence, in so many cases, of any sort of headgate. Water Commissioners cannot properly perform the duties required of them unless each ditch is provided with a properly constructed headgate which is susceptible of being tightly closed and locked when necessary. The law makes provision for the construction by each ditch owner of proper and satisfactory headgates, together with a measuring flume for the purpose of rating the ditch, to the end that the Commissioner, when called upon to regulate the ditches on a stream, can fix the headgates at a point which will admit the amount of water to which the ditch is entitled, or close and lock it when necessary. This law is a very necessary one, and would, if complied with, save much expense and trouble in supervision. Unfortunately it is almost wholly disregarded.

Some way should be devised to enable the Superintendent to compel a compliance with the law, the present provision being found inadequate. The necessary work of the Superintendents in each Division has increased each year, while the appropriation to pay for the same has remained stationary, or has diminished. The result has been that much needed work has had to be neglected and left undone, by reason of which loss and inconvenience has resulted to many appropriators. This has been especially true in my own Division. A great number of ditches, under permits from the State Engineer, have been completed and applications filed for the issuance of certificates of appropriation. I have been compelled to entirely ignore these by reason of the insufficiency of the appropriation for necessary contingent expenses. It will be a very great hardship and injustice to appropriators if provision is not made for taking these proofs the coming year. The appropriators need their certificates to make proof in the land office on their desert entries, and the information obtained is necessary for the State Engineer to enable him to know the condition and extent of appropriations on a stream.

The Legislature at its last session passed a law providing that the Superintendent of Water Division No. 1—being that in which the Capitol is situated—should be Secretary of the Board, and providing that instead of a per diem he be paid a salary. The wisdom of this is apparent, but it should also have provided that the salary be made a separate appropriation, not payable from the per diem appropriation of the Superintendents. The Secretary has, of necessity, to devote his entire time to the duties of the office, and every day not required in the field is needed in office work. It is manifest, therefore, that the appropriation for his compensation should be separate and definite. The work of the Secretary's office has vastly increased in the last four years, and is so increasing with each year. The correspondence and clerical work has now got beyond where it can be disposed of without the assistance of a typewriting machine in the office. The need of this has been felt for two years, but it has been impossible to procure it, since all of the appropriation has been absolutely needed for the necessary field work.

The office is also very badly in need of furniture and fixtures. A separate appropriation should be made for the office in order that these things may be procured, and to provide for the constantly increasing office necessities and occasional clerk hire.

Respectfully submitted,
WM. M. GILCREST,
Superintendent Water Division No. 1
and Secretary Board of Control.

Sundance, Wyo., Dec. 29th, 1900.

Hon. Fred Bond,
Cheyenne, Wyoming.

Dear Sir:—In compliance with your request, I hereby submit to you the report of the condition of Water Division No. 2. During the season of '99, did not generally visit my Division, there being sufficient water in each stream for nearly all of the appropriators, and there was little work for either Commissioner or Superintendent in the Division. During the season of 1900 these conditions were considerably reversed. In most streams the late appropriators had to be closed down before the first crop of alfalfa was matured, Clear Creek, Sand Creek, Big Goose and Tongue River being the exceptions. Consequently the crop this season in this Division was about two-thirds normal. I find as all my predecessors have found, that the all-absorbing problem is how to retain these waters for late irrigation, and can, myself, see but three ways of solving the question. First, preserve the timber upon the mountain sides. Second, by storage reservoirs, and last, by irrigators utilizing the greatest possible amount of the early spring floods. The last seems the only remedy available for the ordinary irrigators.

Now, this year I have taken and examined about forty proofs under permit, finished adjudicating the water of Little Tongue and its tributaries, and find a growing need among the irrigators for the adjudication of Pass Creek, Powder River and the rest of the unadjudicated streams of this Division.

Would recommend that the compelling of appropriators to place headgates in ditches be taken from the hands of the County Commissioners and placed entirely in the hands of the Superintendents, and the limit in which they should comply with that request be reduced to five days.

Attention is called to the present law which requires the Commissioner to regulate the headgates of ditches. In case there is no headgate, the Superintendent is compelled to notify the owner to construct one, and, on his refusal or failure to do so, must then await the tardy action of the Board of County Commissioners. The owner of the ditch is given thirty days in which to comply with the order before the matter can be brought to the attention of the County Commissioners, and then, unless their action is prompt the number of days of immunity which are, by the present law, given to one inclined to evade its provisions, are so numerous as to enable him to use up the whole irrigating season, and to take all of the water which he desires, regardless of the rights of his neighbors, and in defiance of all efforts of the Water Commissioner and the Division Superintendent to confine him within the limits of what rightfully belongs to him. The full control of the whole matter should be in the hands of one authority, and so long as its control is divided between the irrigation officers and the Board of County Commissioners, just so long there will be delays and a way of escape for the wrong-doer.

The law should also make it a misdemeanor for any one to place any rock or any obstruction in the channel of any stream for the purpose of increasing or diminishing the flow of water in any headgate after the same has been adjusted by the Commissioner or Superintendent.

The result of my observations is that the present system of selecting and leasing lands by the State has, upon the whole, been beneficial. The limited amount of land at the disposal of the Board for selection and the consequent impossibility of supplying more than a very small percentage of the demands, has, in some instances, given rise to complaints and objections which would, I think, disappear if a larger amount of land could be selected and disposed of in such a manner as in a measure to satisfy the actual needs of those desiring it. In my opinion, a system which could proceed gradually to the end desired would be of vast benefit to the whole people. An ideal method would be somewhat as follows:

A grant of ten per cent. of the arid lands within the limits of the State, by the Government, would give the State about 5,000,000 acres to be selected at the rate of 1,000,000 acres per year for five years. This land should be leased as fast as selected at a rental of one and a half to two and a half cents per acre, and with a limitation of two sections in each selection upon sixty per cent. of the land selected. The remaining forty per cent. might be selected in somewhat larger tracts in regions remote from settlement and agriculture. As a rule, no lands should be selected which are at present irrigable or likely to become so by means of irrigation projects. A certain percentage of the income from the rent of such lands should be devoted to the construction of reservoirs and other irrigation development. The remaining income so derived might be devoted, at least in part, to good roads or school funds. Such a method of disposing of the revenue would answer the objections of those who might be inclined to think that the building of reservoirs would be too much favoritism to those in the locality to be benefitted. It is believed, further, that a grant of the number of acres above indicated would reveal the advantages of the leasing system, and would at the same time remove the objections which have from time to time been expressed on the part of those who have been unable to secure land which they really needed.

Each lease granted by the State should contain such proviso as would enable the Board of Control, when it might be found necessary, to open a private way for driving live stock through each selection, not exceeding 300 feet in width.

The selection and leasing of lands should remain in the hands of the Board of Control as at present. It seems to me that the land system and the water system of the State are inseparable and that the special knowledge acquired in the administration of one branch is of vast benefit in the other. Neither can be administered successfully when entirely separated from the other.

It is believed that the State would be able to construct her own reservoirs if Congress would give to us the right to use our own resources, and a system of selecting and leasing as above indicated is more likely to meet the approval of Congress, at the same time being sufficient for the present needs of the State, than an attempt to secure the grant of all Government lands within the State limits, or for the appropriation of Government aid in building reservoirs.

Yours very respectfully,
F. S. KELLOGG,
Superintendent Water Division No. 2.

Ten Sleep, Wyo., November 21st, 1900.

Hon. Fred Bond,
State Engineer and President Board of Control.

Dear Sir: As Superintendent Water Division No. 3, I respectfully submit the following report:

During the year 1899, the principal work done in Water Division No. 3 was the adjudication of rights and priorities to water from Owl Creek and tributaries. After due and legal notice had been given, the testimony was taken at Thermopolis and Embar on the 23rd and 25th days of October, respectively, the same being submitted for public inspection at Embar, October 26th, and at Thermopolis on October 28th, due notice of said inspection having been given at the time of taking testimony.

No contests having been filed, all of the testimony was submitted to the Board of Control at its regular meeting in March, 1900, and a decree rendered in conformity with said testimony.

In March, 1900, a re-hearing was granted to Leonard Short by the Board. In this matter the testimony was taken by the Division Superintendent, at Ten Sleep, on the 5th day of September, 1900, and submitted to the Board of Control at its regular meeting in October, 1900, and a decree rendered according to such evidence.

Owing to the fact that Owl Creek is the dividing line between the Shoshone Indian Reservation and Big Horn County, the appropriators from the south bank of the stream and from the tributaries emptying in on the south being under the control of the Federal Government, and the appropriations from the north bank of the stream and from the tributaries emptying in on the north being in Big Horn County, and under State control, there should be an understanding between the State of Wyoming and the Federal Government as to the relative priorities on the different sides of the stream, so that appropriators under State control may know what their priorities are as regards the appropriators on the opposite side of the stream.

In 1900, the work in this Division was confined principally to the adjudication of the Grey Bull River and tributaries, on account of lack of funds to do further field work, there being 229 proofs of appropriation of water taken at Otto and Meeteetse in May, and in August the proofs were duly exposed according to law. No contests being filed, all of the proofs taken were submitted to the Board at its regular meeting in October, 1900, and a decree rendered in conformity with said proofs.

Owing to the light snowfall in the mountains on the headwaters of the Grey Bull River, there was a scarcity of water there this year, the river being dry from Otto to the mouth. I believe that there was enough water wasted that could have been saved by a competent Water Commissioner to have supplied all of the appropriations on the stream.

The need of an adjudication of the rights from Shell Creek, Willow Creek, Five Springs Creek, Crooked Creek and Bad Water Creek in this Division is very urgent on account of the over-appropriated condition of the streams.

Respectfully submitted,
B. B. MORTON,
Superintendent Water Division No. 3.

ACKNOWLEDGMENTS.

This office is indebted to J. Frank Warner, U. S. Deputy Surveyor, for the surveys of the Piney Lakes. These lakes were surveyed under a Government contract and the results furnished this office without charge.

To the various railroads throughout the State acknowledgments for transportation furnished this office are also due and are herewith made. The interest taken by these companies in the development of the State has resulted in a material increase of the work accomplished by this office.

PERMITS TO APPROPRIATE WATER.

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2010	4	George Hawkin	Ham's Fork	1.5	2.5	2	2	15	$ 250	200	1900
2011	1	Steven F. Smith, Adolph Corrao	Box Elder Cr.	1	5	4	1	4		57.5	1899
2012	4	George Waite	Swift Cr.	2	6	5	1	10	75	160	1900
2013	2	G. W. Newell and Geo. Harris.	Tongue River	.75	5	4	1	4	550	60.2	1899
2014	4	H. K. Glidden	Gros Ventre River	2	10	8	1	5.28	320		1901
2015	3	George Marquette	South F'k Shoshone River	.75	3.5	3	.5	5.28	100	50	"
2016	1	Thomas Hutchinson	Alkali Cr.	1.5	8	6	1	5.28	400	95	1900
2017	1	A. E. Ragen	North Platte River	2.08	10	6	2	1.1	2,310	173	1901
2018	3	E. Amoretti, Jr.	Horse Cr.	1.125	3	2	1	3.5	300	50	1899
2019	3	" "	" "	1.25	4	3.5	1	10	350	125	"
2020	1	J. B. Roberts	Nigger Joe Cr.	1	3	2	1	4	300	75	1900
2021	1	B. F. Fuller	Bares Cr.	.6	4	2.5	1.5	5	150	28	1899
2022	3	Geo. and G. E. Greet	Spring Cr.	.69	7	6	1	8	150	224	1901
2023	4	Jos. S. Nelson, Sr.	Nickle Spring Cr.	.75	4	3	2	2	100	40	1900
2024	1	W. J. Miller	Cloud Cr.	1.1	3	2	1	20	350	70	"
2025	3	E. A. Boots	Ditch Cr.	1.25	5	3	1	4	150	110	1899
2026	3	B. F. Bausman, Wm. McComb.	Bridger Cr.	3.25	16	8	5	5	500	347	1900
2027	1	E. Royce, H. Frendenthal and O. Royce	North Platte River	4.75	8	6	1.5	2.5	3,000	627	1902

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2028	3	David Hank and E. A. Boots	Ditch Cr.	1.25	5	3	1	15	$ 150	99	1901
2029	4	L. W. Lincecum, S. F. Lindly and J. W. Lindly, Jones Lindly, G. F. Whitman, G. W. Whiteman and J. Demott	Green River	5.25	14	12	1.5	2.4	1,500	1,128	1902
2030	3	H. A. C. Darley	Belknap Cr.	1.75	6	4	1	5.28	100	90	1899
2031	1	Wm. O'Brien	Third Cr.	2					1,000		
2032	1	F. B. Curtis	Curtis Cr.		3	2	1	10	50	56	1901
2033	4	Maggie L. Simpson and Peter H. Karnes	Cache Cr.	.75	5	4	1	10.56	125	200	1900
2034	4	Al and Sadie Osterhout	North Piney Cr.	2.5	3.5	2.5	1.5	48	300	95	"
2035	3	A. D. McCaul	Spring and Jordan Cr.	1.75	2.5	2	.5	5.28	100	38	1900
2036	4	John Wardell	Green River	2.75	8	6	1.5	2.75	800	294	1901
2037	2	Mary P. W. Bacon	Seepage water, Sec 15, T. 51, R. 82	.5	1.5	1	.66	15	50	20	1899
2038	1	J. W. Dickie	Cloud Cr.	2.125	6	4	2	10	150	55	1901
2039	1	Horace W. Rate	Badwater Cr.	.75	5	3	1.5	5	200	54	1899
2040	1	" "	" "	.625	5	3	1.5	5	200	70	"
2041	4	J. H. W. Strong	West Fork of New Fork	.25	5	4	1	4	200	77	"
2042	2	S. R. Stalcup	Cottonwood Cr.	1	6	4	1	5.28	150	70	"
2043	1	Henry Hasmusson	Springs, Secs. 12, 13, 14, T. 17, R. 88	2	3	2	1	10	200	150	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2044	4	Mrs. Mary Wright and W. C. Wright	Ham's Fork Cr.	1.25	4.5	4	2	6.66	$ 175	185	1899
2045	2	A. A. Hember	Springs, Sec. 6, T. 52, R. 62						75		1900
2046	1	D. J. Sheehan	Springs, Sec. 32, T. 31, R. 91						25		"
2047	2	A. D. Brown	Government Canyon	1.16	3	2	1	6	500	150	1901
2048	1	Clara Foxton	Elkhorn Cr.	.356	5	2	1	5	45	11.5	1900
2049	1	" "	" "	.42	4	2	1	8	35	27	1899
2050	1	" "	" "	.375	4	2	1	8	30	11.5	"
2051	1	" "	" "	.187	4	2			25	11	"
2052	3	R. B. Beck and F. S. VanRiper	Wiggins Fork	4.5	6	5	1	5	2,000	555	1901
2053	1	D. W. Leman	Beaver Cr.	.5					50	12	1900
2054	1	" "	Red Canyon Cr.						50	12	"
2055	1	Russell Thorp, Jr.		.5	2	1	.8	8	125	4	"
2056	2	Louis E. Deolin	Spotted Tail Gulch	1.25	2	1.33	1.17	.25	800		"
2057	2	A. M. Smith	Middle F'k Powder River	1	6	4	1	5.28	700	70.5	1899
2058	1	I. N. Hughes	Horse Cr.	1.625	7	5	1	3.5	320	70	1900
2059	1	Nels P. Nelson	Big Laramie River	2.5	7	5	1	4	750	240	"
2060	1	May King	King Cr.	3.25	6	4	1.5	7	700	455	1899
2061	2	Milo A. Adams	Inyan Kara Cr.		4.5	4	1.8	4	300	135	1901
2062	3	C. M. Jones Hulfield	No Wood Cr.	2.847	15	7	1.5	2	1,000		1902
2063	1	I. C. Miller	O'Brien Springs	.187	4	2	1	5.28	60	14	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2064	4	O. O. Stoddart	Black's Fork Cr.	6	12	8	2	5.28	$ 1,500	1844.4	1902
2065	2	S. B. Thomas, Fred Burnett	Sand Cr.	1.75	4	3	1	6.5	600	155	1900
2066	1	Wm. O. Newill	Antelope Cr.	2	3	2	1	6.5	350	140	1901
2067	1	" "	" "	1	3	2	1	6.5	200	95	"
2068	1	Clara Foxton	Elkhorn Cr.	.136	4	2	1	8	20	5.5	1899
2069	4	J. H. Hill	Willow Cr.	.75	6	4	1.5	5.28	400	294	1901
2070	2	J. L. Baird	Stockade Beaver Cr.	.721	8	4	2	4	300	300	1900
2071	1	Edwin Meredith	Medicine Bow River	4.5	6	4	1.5				1901
2072	1	G. W. Rhoades	Spring Cr. Dam	1.25	2	1	1	15	100	72	"
2073	1	Jas. Atkinson	Pine Gulch	.5	3	1.5	1.5		100	55	1900
2074	1	" "	Camp Cr.		1.5	1	1				"
2075	2	Manuel Armenta	Natural Lake	2.5	6	5	1	7	50	158	1901
2076	2	Ole Broberg	North Fork Powder River	.623	3.5	2.5	1	5	250	33.5	"
2077	2	David Q. Cummings	Clear Cr.	9	3.5	3	1	10	750	135.4	"
2078	4	Samuel Densley	Lake Cr.	1.75	6	4	1	5.28	600	254	"
2079	3	J. G. Borner	Dry Cr.	3.5	8	6	1	6	500	541	"
2080	1	Sherman Craner	Sweetwater River	1.9	6	3	1.5	2.64	200	131	"
2081	3	C. T. Jones	Alkali Cr.	1.25	3.5	2.5	1	15	200	129	"
2082	4	Wm. Wells	Little Gros Ventre	.75	6	5	1.2	8	400	260	1900
2083	4	" "	" " "	.75	5	4	1	4	250	75	"
2084	2	Emil Krause	Inyan Kara Cr.	3	5	4	1	5.25	650	235	1901
2085	4	Wm. Wells	Lime Cr.	.75	4	3	1	8	350	193	1902

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2086	3	J. B. Pruyn	Red Gulch	2.25	6	4	1		$ 250	80	1901
2087	2	A. B. Gillespie	North Laramie River		5	4	1	2.5		200	1902
2088	2	" "	" " "	3.25	5	4	1	2.5			"
2089	1	James Davies	Muddy Wagon Hound Cr.	.125	4	3	1	8	100	68	1900
2090	1	" "	" " " "	.25	4	3	1	8	180	42	1901
2091	1	Christian Christiansen	South Fork Sybille Cr.	1.5	10	4	1	4	150	125	"
2092	1	Louis P. Rover	North side " "	1	6	3	1	4	50	90	"
2093	3	Wm. F. Walls	Alkali Cr.	1.25	3.5	2.5	1	6	250	132	"
2094	2	F. W. Avery	Sand Cr.	1.25	3	2	1	6.5	200	33	1900
2095	2	" "	" "	1.5	2.5	2	1	6.5	100	12	1901
2096	2	" "	" "		2.5	2	1	1.5	150	15	"
2097	4	Thos. Poole	Green River	.625	4	3	1	18.8	100	115	"
2098	2	Wm. H. Mathews	Bear Cr.	3	3	3	1.66	4	400	175	1899
2099	4	Denver L. Hysell	Smith's Fork	1.118	4	3	2	4	25	130	1900
2100	1	E. E. Lufkin	Timber Cr.	1	3	2	1.5	50	150	120	"
2101	1	" "	Brush Cr.	.25	1.5	1	1	20	50	40	1901
2102	2	Anthony Stilp	Sand Cr.	2.317	4	3	1	6.5	500	35	"
2103	4	B. G. Griggs	Middle Piney Cr.	.375	6	4	2	6.4	150	85	1900
2104	4	" "	" " "	.75	6	4	1.5	4	200	30	"
2105	1	J. D. Nietfield and H. Nietfield	Laramie River	3.804	14	8	2	1.58	2,750	728	1902
2106	4	George Ryter	Little Gros Ventre	1.25	4	3	1	20	100	134	"
2107	2	Mrs. F. S. Kellogg	Snow water	.396	4	3		80	100	40	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
2108	2	C. J. Finch	Sand Cr.	.75	3	2.5	1	3.5	200	60	1900
2109	2	W. H. Nefsy, M. Nefsy, J. Nefsy	Heuston Cr.	1	6	4	2.5	5.25	1,000	170	1901
2110	3	Wm. F. Newbold	Big Sandy River	1.374	5	4	1.5	6	800	100	1900
2111	3	Wm. F. Cody, Nate Salsbury	Shoshone River	109	45	25	10	2	1,000,000	120000	1905
2112	2	J. G. Davis	Middle Fork Powder River	1.5	3	2	1.5	4	250	65	1900
2113	4	H. K. Hoff	West Fork New Fork	.25	4	3	1	5	35	20	"
2114	2	F. C. Kellogg	Surface water	1.116	4	3		80	200	130	1902
2115	1	Martha Olin	Red Canon Cr.	.333	4	2	1	10	75	10	"
2116	1	" "	" " "	.25	4	2	1	10	50	20	"
2117	1	Eric Olin	" " "	.75	4	3	5	10	150	75	"
2118	1	" "	" " "	.375	4	3	.5	10	100	28	"
2119	4	J. L. Stevens	Smith's Fork Cr.	.029	2	1	.66	10	15	60	1901
2120	2	G. W. Westlake	Five Mile Cr.	1.5	3	2	1.5	5	300	45	"
2121	1	A. A. Harper	Whiskey Cr.	2.1	4	2	1	10.56	240	160	"
2122	1	" "	Muddy Cr.	1.3	4	2	1	5.28	110	160	"
2123	4	F. A. Brown	Clear Springs		2	1		25	100		"
2124	4	Mary E. Hepworth	Willow Cr.		3.5	2.5	1	4	160	120	1900
2125	1	Jas. Atkinson	Trail Cr.	.5	2	1.5	1		100	60	"
2126	2	C. A. Scott	North Branch Rocky Ford	3	4	2	1	7	500	640	"
2127	2	Walter Roadifer	Snow water	.965	3	2		60	200	79	1901
2128	2	C. A. Scott	Rocky Ford Cr.	2.5	4	2	1	7	1,000	300	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2129	2	C. A. Scott	South Redwater	1	4	2	1	7	$ 500	320	1901
2130	2	" "	Government Cr.	6	4	2	1	7	1,000	160	"
2131	1	Eliza White	White Cr.	.5	5	3	1	8	100	37	1900
2132	1	" "	" "		5	3	1	8	100	27	"
2133	1	Willard H. White	" "		5	3	1	5	100	98	1901
2134	1	C. A. Guernsey	Fremont Warm Spring						2,500	20	1902
2135	1	L. M. Misters	Field Creek No. 2	28	2	1	1	15	100	49	1900
2136	4	Thos. Cowlishaw	Bear River	7	6	4	1.5	5	1,500	300	1901
2137	2	J. S. Benton	Jackson Cr.	.9	4	2	1	27	125	60	1899
2138	2	" "	" "	1.75	4	3	1	211	100	80	"
2139	4	E. H. Bradshaw, Paston, Thatcher and C. E. Lyons	Middle Beaver Cr.	28.25	5	3	1.5	4	1,000	768	1901
2140	2	Margaret A. Miles	N. Fork Powder River	.75	5	3	2	5	175	75	1900
2141	2	A. M. Oglesby and A. N. Keith	Middle Fork Powder River	.937	5	4	1	5	200	72	1901
2142	1	David Gordon	Horse Shoe Cr.	1	6	4	1	5.3	300	75	1900
2143	1	G. H. Rosentreter	Sybille Cr.	1	5	2.5	1.5	8	100	80	1901
2144	1	C. F. Kanatt	Cow Cr.		4	3	1	10	125	160	1900
2145	4	N. J. Christopherson and Hale	Spring, Kennington Canon	1.25	.25		.25	50	14.5		1902
2146	3	Walter Kepford	Timber Cr.	.75	2	1	1	10.56	50	65	1901
2147	3	" "	South Fork Stinkingwater	.515	2	1	1	5.28	150	20	1900
2148	4	J. A. Boss	Lake Cr.	1.25	6	4	1	8	600	287	1901
2149	3	R. M. Norboe	South Fork Deer Cr.		3	2	.5	10	50	60	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2150	4	W. H. Cox, Amanda Cox, W. P. Francis, J. M. Francis	Pine Cr.	6	10	8	1.5	4	$ 2,000	1,115	1901
2151	1	Nels Nelson	Spring Cr.	.433	3	2	.5	5	100	60	1900
2152	4	E. Wardell and C. F. Zufelt	Smith's Fork Cr.	1.5	7	6	1	12	75	310	"
2153	2	Milton Carter	Five Mile Cr.	1	4	2.5	1	10	50	40	"
2154	2	" "	" " "	1	4	2.5	1	10	50	70	"
2155	4	K. J. Jomen	East Fork of New Fork	2	5	3	1	10	350	150	1901
2156	2	J. R. McDowell	North Fork Powder River	.625	4	3	1	5	50	25	1900
2157	3	J. H. Thompson	Little Warm Spring Cr.	.75	3	3	.5	6.66	250	75	1902
2158	1	Shelby Hoffman, Emil Haberthur, Dr. J. S. Cathin, F. D. Harrington, Dr. J. J. Adams and Dr. H. Miller	N. side N. Blue Grass Cr.	1.375					8,000	640	1900
2159	1	Shelby Hoffman, Emil Haberthur, Dr. G. S. Cathin, F. D. Harrington, Dr. J. J. Adams and Dr. H. Miller	West side of Spring	.8					5,000	640	"
2160	4	F. C. Fisher and C. H. Fisher	Pole Cr.	.625	8	6	1.5	30	400	790	1902
2161	4	" " " " "	" "	7	12	10	1.5	8	2,500	1,985	1903
2162	2	Wm. Triel	Five Mile Cr.	1.25	4	2.5	1	5	100	12	1900
2163	2	Herman Woodward	Branch Five Mile Ditch	.75	4	2.5	1	10.56	40	25	1901
2164	1	Elsie Hendrick and Wm. Keith	Spring Cr.		5	3	1	35	400	30	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2165	1	Wm. Keith	Nigger Cr.	.5	5	3	1	10	$ 100	18	1900
2166	1	G. P. Clayton	Batts Cr.	3.75	6	4	1	5.28	500	312	"
2167	1	Emma J. Clayton	Hunton Cr.	.75	5	3	1	10	100	200	"
2168	4	T. J. Mills and W. E. Mills, Jr.	Fish Cr.	2	7	5	1	8	300	342	"
2169	4	" " " " " "	" "	2.75	6	4	1	8	300	210	"
2170	4	W. E. Mills, Jr.	" "	.375	5	3	1	8	100	135	"
2171	4	M. F. Loomis	Small spring in Sec. 31, Tp. 37, R. 110	.5	4	3	1	8	250	102	"
2172	4	Mary Wright	Trail Cr.	1.5	4.5	4	1	9	100	52	"
2173	3	J. W. Richardson	Middle Branch West Kirby Cr.	.714	5	3	1	4	200	44	"
2174	4	L. Emil Nelson	Kendricks Cr.	1.5	3	3	1	25	120	303	"
2175	4	J. J. Rahm	W. Fork New Fork River	2	7	5	1.5	6.66	350	360	"
2176	1	H. A. Burtch	Canyon Cr.	.75	4	3	1	7	200	32	"
2177	1	" "	" "	.75	4	3	1	7	200	30	"
2178	1	John Anderson	South Fork Casper Cr.	.294	4	2.5	1	8	75	47	"
2179	4	G. W. Kissinger, Fred Lovejoy	Gros Ventre River	2	9	7	1	10.56	300	310	"
2180	3	F. A. Whitney, J. B. Gleaver	Grey Bull River	5	8	5	1.5	5.25	1,000	598	"
2181	4	E. C. Blakeslee and F. A. Ewen	Spring, T. 42 N., R. 115 W.	1.25	5	4	1	2.64	150	85	"
2182	4	Fred E. Weiss	Silver Cr.	1	4	3	1.5	80	300	295	1901
2183	4	J. P. and F. H. Sykes	Middle Piney Cr.	1	7	5	1	9	250	395	1900
2184	4	J. P. and Ellen Sykes	" " "	1	5	3	1	24	200	300	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
2185	4	J. P. Sykes and Stephen Daniels	Middle Piney Cr.	2	7	5	1.5	6.4	$ 350	446	1900
2186	1	John Blessing	Deer Cr.	.5	5	3	1	4	100	30	“
2187	1	E. M. Hicks	S. F'k Little Laramie R.	.88	4	3	1	52.8	200	82.7	“
2188	4	E. M. Combs.	Twin Cr.	1.35	8	7	1.5	5.28	375	285	“
2189	4	J. L. Fleming, W. M. Fleming, W. M. Johnston and I. J. Walker	North Piney Cr.	1.75	8	5	1.5	6	400	625	“
2190	4	D. M. Caldwell	Slough, Bear R.	.41	2	1	1	7.92	350	8.39	“
2191	2	C. A. Scott	Snow water, Ogden Gulch	.996	3	2		44	300	137	1901
2192	4	Fred S. Boyce	New Fork	1	6	4	1	4	250	135	1900
2193	4	Michael Lowham	Branch of Mill Cr.	.75	3	2	1	8	70	55	“
2194	4	“ “	“ “ “	.75	3	2	1	8	80	45	“
2195	4	H. R. Meeks	Smith's Fork Cr.	.1	2	1.5	1	15	20	70	“
2196	4	“ “	“ “ “	.016	2	1	1	8	10	50	“
2197	4	Wasatch Live Stock Company	Dry Cr.	3.75	5	3	3	100	500	200	“
2198	4	F. B. Margetts	Spring (Long)	2	4	3	.66	15	100	320	1901
2199	1	Whitehouse & Palmer	Spring Cr.	1.33	4	3	1	5.28	300	280	1900
2200	1	“ “	“ “	1.25	3	2	1	5.28	300	100	“
2201	4	A. L. Gray	Black's Fork River	2.03	4	3	1	8	50	135	“
2202	1	Mary J. Loomis	Little Beaver Cr.	2	8	6	1.5	10.56	500	250	“
2203	1	H. R. Hall	Clark's Cr.	1	4	3	1.5	23	100	68	“
2204	1	“ “	“ “	.625	4	3	1	15	50	25	“

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2205	1	Felix Atkinson	Sheep Cr.	2.5	4	3	1	4	$ 250	128	1900
2206	1	" "	" "	3.266	6	5	1	5	600	409	"
2207	1	Wm. E. Finfrock	Mud Springs	.5	4	3	1	4	300	80	"
2208	4	J. I. May, Jas. Budge, J. W. Henry, M. W. Henry and Wm. Bierer	Gros Ventre River	3	12	10	1	5.28	1,000	760	1901
2209	4	Edward Olson	Olson Spring	1.25	.2	.16		10	250	20	"
2210	1	G. H. Arnold	Deer Cr.	.5	5	3	1	5.5	100		1900
2211	2	J. H. Duling	Spring Cr.	1	1.5		1	80	50	80	"
2212	1	J. F. Crawford	South Fork Casper Cr.	1.012	4	3	1	6	200	41	"
2213	3	C. R. Berger	Split Rock Cr.	.75	3	1.5	1	8	60	75	"
2214	1	G. J. Wagoner	Muddy Cr.	.5	4	3	1	7	60	30	"
2215	1	Jas. Milne	Sinking Springs	.75	4	3	1	10	100	48	"
2216	1	D. J. Smythe	Windy Ridge Cr.	.5	5	3	1	8	200	17	"
2217	1	" "	" " "	.7	5	3	1	8	250	34	1901
2218	3	Jos. St. John	Jones Cr.	1.5	4	2	1.5	6	200	148	1900
2219	1	Fred B. Collins	Sand Cr.	2.75	5	3	3		900	108	"
2220	3	Albert Harmen	East Branch Middle Fork Jones Cr.	1	4	2	1	5	150	85	"
2221	3	" "	West Branch Middle Fork Jones Cr.	1.5	5	3	1	4	300	213	1901
2222	2	H. H. Freeman	Beaver Cr.	1.712	6.5	5	1.5	3	500	263	"

PERMITS TO APPROPIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2223	4	A. M. Peterson and Michael....	Black's Fork River	1.07	6	5	1	8	$ 100	305	1900
2224	1	Jas. Atkinson, Jr.............	North Laramie	1	4	3	1	4.5	200	77	"
2225	1	J. Chamberlin...............	Red Rock Spring						150		"
2226	3	Philip Evans	Madison Cr.............	.25	2	1	1	6.66	25	4	1899
2227	3	Otto Chandler	Dry Cr.................	1.25	4	2	1	6.66	200	60	1900
2228	3	" "	" "	1.75	4	2	1	6.66	200	90	1901
2229	3	J. S. Johnson...............	Hoodoo Cr..............	1	4	2	1	8	100	65	1899
2230	1	J. A. Schoonjans.............	Brush Cr...............	1.5	4	2	1.5	3	100	320	1900
2231	3	Wm. C. Pyle.................	Big Wind River.........	1.25	4	4	1	6.6	800	195	"
2232	3	H. S. Cover	Grass Cr...............	1.25	4	2	1	8	250	243	"
2233	1	A. J. Goetz and A. W. Casservan	North Fork Sage Creek...	5	5	3	2	5.5	1,000	396	1901
2234	4	C. J. Allen..................	Meadow Cr.............	.75	4	3	1	10.56	100	160	"
2235	1	J. C. Spry..................	Willow Cr..............	.5					5,000		"
2236	1	" "	" "	.75	6	4	1.5	8	1,000		"
2237	1	Alexander Sellars	Prager Cr..............	.625	3	2	1	6	100	62	1900
2238	4	H. F. Meyer.................	South Cottonwood.......	.75	6	4	1	8	300	150	1901
2239	4	F. E. Zahner	South Fork Cottonwood..	1.5	4	3	1	32.6	450	108	"
2240	4	Robert Gardner..............	Strawberry Cr..........	.75	3	3	1.5	18	100	160	1900
2241	4	Betty Nelson and J. L. Barber..	Gros Ventre River.......	2.75	10	8	1	10.56	300	480	1901
2242	3	W. W. Rennels	Front Cr...............	2.25	4	4	1	20	300	234	"
2243	2	G. W. Tutty.................	Springs, Sec. 32, Tp. 53, Range 67	2	2.5	2	1	80	300	160	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2244	1	M. L. Center, R. J. Slothower..	Clark Cr................	2.312	5	3	1.5	5	$ 400	382	1900
2245	4	J. Angus, G. Johnson and B. G. Griggs	Middle Piney Cr.........	3	5.5	5	2	69	350	643	"
2246	4	George Johnson..............	" " "		5	3	1	5.28	150	72	"
2247	2	Edward Douglas..............	Alkali Spring...........	.63	3	2	1	10	50	130	"
2248	4	Annie Spencer...............	Cottonwood Cr..........	2.75	8	6	1	4	600	266	1902
2249	4	A. C. Stilwell................	West Birch Cr..........	.58	2	1.5	1	5	200	160	1901
2250	3	I. H. Williams	Sykes Ditch............	1.5	6	4	1		100	152	1900
2251	3	C. E. Temple................	West Fork of Clear Cr...	1.625	3	2	1	25	130	147	1901
2252	4	C. P. Rice....................	Smith's Fork Cr.........	.12	1.5	1	.66	8	10	12	1900
2253	1	George Mosgrove............	Medicine Bow River......	1.589	3	2	2	1	400	160	"
2254	4	C. P. Rice....................	Smith's Fork Cr.........	.23	3	2	1	15	30	88	"
2255	3	C. D. Adams	Sioux Cr...............	1	3	2	1	25	100	74	1901
2256	1	R. A. Crosthwaite............	Bear Springs Cr.........	1.5	3	2	1	7	150	40	1900
2257	1	H. T. Hayworth	Canyon Cr..............	1.75	3	2	1	5.28	200	110	"
2258	1	The Octavia Mining Company..	Main Savery Cr..........	2	4	2	1.5	20	2,000	160	1901
2259	4	Wm. T. Alexander...........	South Cottonwood.......	.75	10	8	1	26.5	300	290	"
2260	1	H. R. Hall	North Laramie River.....	1.75	5	3	1.5	5	300	108	"
2261	4	Chas. Shear	North Cottonwood Cr....	1.625	6	4	1	6	500	140	"
2262	4	Clark Logan.................	Henry's Fork	.24	3	2	1	3	100	40	1900
2263	4	Clark Logan.................	" "	.79	3	2	1	3	300	120	"
2265	3	W. W. Eheler................	Red Bluffs Cr..........	.5	4	2	1	8	100	10	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2266	4	People's Canal Co.	Henry's Fork		10	8	1.5	6.5	$ 5,000	3,920	1902
2267	4	Robert Fitzhugh	South Beaver Cr.	1.5	6	4	1	4	300	265	1901
2268	4	J. A. Lloyd	Sage Cr.	.5	2.5	2	8	10.5	100	40	1900
2269	1	P. H. Schallenberger	Cottonwood Cr.	.775	3	2	1	6	100	21	1901
2270	1	“ “	“ “	.975	3	2	1	6	100	31	1900
2271	3	J. W. Thomas	Wood River	1	4.5	3	1	8	100	52	“
2272	3	D. B. Sheets	South bank Grey Bull R.	2	6	4	1	7	300	100	“
2273	4	A. M. Hill	Green River	.75	6	4	1.5	4	250	160	“
2274	4	A. M. Hill and Carrie Hill	“ “	4	10	8	1	5.28	1,200	432	1901
2275	3	Eugenie Cleophas	Cottonwood Cr.	.5	8	6	1	4	300	275	1900
2276	3	Joe Henry	No Wood River	2	6	5	1	4.28	500	133	“
2277	3	David Shoening	Crawford Cr.	1	2	2	1	20	100	66	“
2278	4	E. J. Herring	Corral Cr.	.5	3.5	3	1	15	100	60	1901
2279	4	Wm. H. Gray	Beaver Cr.		7	4	1.5	8	100	150	1900
2280	4	M. J. and E. V. Kerr and Wm. H. Gray	South Beaver	2.25	8	7	1	6	500	475	1901
2281	1	C. A. Moyer	North Cr.		4	3	1	5.25	200	80	“
2282	3	F. R. McCoy and S. T. Major	Gooseberry Cr.	2.5	3	2	1	6.8	150	125	1900
2283	3	“ “ “ “ “	“ “	2	3	2	1	6.8	150	60	“
2284	3	G. H. and J. W. Richardson	West Kirby Cr.	2	8	6	1	6	350	145	“
2285	3	J. W. Richardson	Spring Branch Kirby Cr.	.75	3	2	1	7	50	31	“
2286	4	R. S. Null	Pole Cr.	2.25	6	4	1	5.28	500	135	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2287	4	C. Bickel and L. Dickinson	Green River	2.25	8	6	1.5	4	$ 1,500	577	1902
2288	1	George Atkinson	North Laramie River	1.5	5	4	1.5	4.5	250	165	1901
2289	4	W. and J. Stringer	Willow Cr.		12	10	1	8	100	320	1900
2290	1	W. S. Earhart	Seepage water	.037					75		"
2291	3	M. E. Doubleday	East Spring	.204	1	1	1	10	50	5	"
2292	3	W. M. Doubleday	Lyside Cr.	1.5	4	3	1	10	300	125	1901
2293	1	W. M. McRae	Middle F'k Casper Cr.	.5	3	2	1	5	100	40	1900
2294	1	Kenneth McRae	Wallace Cr.	.5	3	2	1	5	100	45	1901
2295	1	L. P. Larry	Springs, Sec. 4, T. 34, R. 82		3	2	1	5	100	40	"
2296	1	D. E. Goddard	Spring, Old Woman Cr.	.25	3	2	1.5	6	150	30	1900
2297	4	J. E. Brown	North Beaver Cr.		6	4	1	14.5	250	275	1901
2298	1	J. J. Ortiz	No Water Cr.	1.25	4	3	1	6	200	200	1900
2299	4	P. R. Hoffman	Middle Fork Sage Cr.		2.5	2	.5	10.56	100	95	"
2300	1	A. P. Chenoweth	Reservoir (Bad Water)	1	3	2	1	3	100	60	1901
2301	1	Jas. Atkinson, Sr.	North Cr.	2.5	3	2	1.5		195		"
2302	3	D. N. Hale and R. A. Baldwin	Alkali Cr.	1.37	5	3	1	16	150	150	"
2303	1	Wm. Irwin	Blue Grass Cr.	.75	3				300		1900
2304	1	G. H. Gilland	All Springs on Secs. 16 and 17	.017	4	2	4		50		"
2305	3	Catherine Reck	Meadow Cr.	.657	3	2	1	10	75	35	1901
2306	4	A. L. DeWitt and E. E. Baylor	Owl Cr.	2	6	4	1	3.2	250	257.75	1900
2307	1	Donald McDougal	Wallace Cr.	.26	3	2	1	5	50	30	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2308	3	E. E. Baylor and V. L. Purvis..	Owl Cr..................	1.75	6	4	1	3.2	$ 200	228.77	1900
2309	4	J. A. Wall....................	Black's Fork Cr.........	1.72	4	3	1	8	100	160	"
2310	2	D. and W. Eggart............	North Fork Grand Gulch.	1.2	5	3	1	10.56	350	20	1901
2311	2	" " " "	Smith's Fk. Grand Gulch.	.75	5	3	1	10.56	250	16	"
2312	2	Ella Huntington.............	Springs, Sec. 33, T. 57, R. 87	.75	2	1	1	20	100	80	1900
2313	1	Jas. Allen.....................	South Sybille............	.75	4	2	.5	2	150	25	"
2314	1	E. O. Houck..................	Indian Cr...............	.816	3	2	1	5	150	46	"
2315	1	" "	" "	.861	3	2	1	5	150	47	"
2316	3	F. G. Slack..................	Grey Bull River.........	1.25	3	2	1	10	100	67	1901
2317	4	A. Williams and F. McBride...	Gros Ventre River.......	1.5	9	8	1	10.56	250	320	"
2318	3	M. Rohan....................	Cottonwood Cr..........	3.375	5	3	1	10	200	139	"
2319	3	C. and W. G. Teyhl, J. Refior .	Grey Bull River.........	.855	7	6	1	5.28	545	460.5	1902
2320	4	Susan Renshaw..............	North Piney Cr..........	.25	4	3	1	20	80	53	1901
2321	2	Wm. Hodge..................	North Fork Spring Cr....	.5	4	3	1	5	250	64	"
2322	4	G. H. and Kate Burkhalter....	Boulder Cr..............	5.25	6	4	1.5	20	1,200	850	1903
2323	3	T. W. Clark..................	Kirby Cr................	.771	2	1.5	1	5	150	68	1900
2324	4	Henry Bosey.................	North Piney Cr..........	1	5	4	1.5	27.5	350	320	1901
2325	3	A. Kanson...................	Poison Cr...............	.351	2	1.5	1	10	50	25	1900
2326	4	C. K and F. Mills, Delia Daniels and Christian J. Nelson	North Piney Cr..........	2.29	8	5	1.5	13	500	773	1901
2327	2	Wm. Hodge..................	North Fork of Spring Cr..	.5	5	4	1	5	275	80	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2328	3	J. and D. Williams and L. A. Mansean	Torrey Cr.	4	7	5	1	24	$ 1,000	650	1900
2329	3	Wm. K. Carson	Big Wind River	1.5	5	3	1	8	250	75	"
2330	3	O. G. Green	" " "	2	5	3	1	6.33	250	105	"
2331	3	R. Green, O. G. Green and Sarah J. Green	" " "	4	8	6	1	12	1,500	430	"
2332	1	M. J. Gothberg	Sheep Cr.	.25	2	1	1	7	75	5	"
2333	4	L. W. and E. E. Blakesley, Mrs. O. A. Blakesley, S. W. Lite	Grey Bull River	4.213	9	8	1	7.64	586.5	633	1901
2334	4	O. and J. Swanson, J. H. Kennington and A. M. Nielson	Dry Cr.	1.25	5	4	1	15	100	120	"
2335	4	Lee Daniels	North Piney Cr.	.575	5	3	1.5	13	150	200	"
2336	3	Robt. Bragg	Lost Cabin	2	3	2	1	20	300	152	"
2337	3	W. Thayer and Chas. Blynn	Grey Bull River	4.25	5	4	1	5	700	297	"
2338	1	Robt. Vietch	Flood water, Cow Hollow	.8	6	4	1	8	100	105	"
2339	2	Mary Ogden	Spring Gulch	.125	3	2		80	50	10	1900
2340	4	Lewis Travis	Middle Piney Cr.	.375	5	3	1	8	100	94	1901
2341	4	" "	" " "	.25	4	3	1	19	80	65	1900
2342	3	Jacob Johnson	Luman Cr.	65	3	2	.83	108	150	38	"
2343	4	J. H. Overy	Willow Cr.		3	2	1	6	25	70	1901
2344	3	" "	" "	.969	4	3	2	3	30	80	"
2345	3	Jared Williams	Beaver Cr.	1.5	3.5	2	1	5.3	400	50	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2346	4	M. F. Loomis	Tributary Green River	.5	4	3	1	8	$ 200	25	1900
2347	4	Kate Travis	North Piney Cr.	.25	7	4	1	4	80	95	1901
2348	3	O. McClellan	No Wood Cr.	1.75	5	4	1	15	500	81	"
2349	3	Wirt Brown	Big Horn River	1	6	4	1	5.3	300	130	"
2350	3	C. J. Babb	Red Gulch Cr.	2	5	3	1	6	250	196	"
2351	1	David Cochran	McFarlane Cr.	.5	3		1	7	50	25	1900
2352	1	Janet McFarlane	South Fork McFarlane Cr.	.5	2.5	2	1	20	25	15	"
2353	1	Thomas McFarlane	M. Fork McFarlane Cr.	.5	3		1	25	25	13	"
2354	1	D. R. and Clara Sutphin	Willow Cr.	.6	5	3	1	8	100	26	1901
2355	1	" " " "	" "	1.5	5	3	1	8	300	70	"
2356	1	Hanna Johnson	Johnson Cr.	.45	5	3	1	15	100	36	"
2357	1	" "	" "	.15	4	2	1	15	50	8	1900
2358	1	G. Walkinshaw and G. Deboe	Deer Cr.	1	7	5	1	4	200	92	"
2359	1	Al Smith	North Platte River	2	15	8	4	10	1,000	200	"
2360	1	A. Cheesbrough	Bridge Cr.	.75	4	3	1	25	120	160	"
2361	1	Maria Cheesbrough	Fish Cr.	.5	4	3	1	25	120	120	"
2362	3	Mabel Starks	Squaw Cr.	1.5	4	3	1.5	20	200	100	"
2363	3	Percy Shallenberger	South Fork Otter Cr.	1.5	4	3	1	20	300	140	1901
2364	4	S. A. Slate	Green River	.75	4	3	1	40	200	165	"
2365	4	A. Price	" "	.625	7	5	1.5	4	300	290	"
2366	4	J. L. Carpenter	Black's Fork Cr.	.14	4	3	1	8	30	160	"
2367	3	O. J. Palmer and R. Johnson	Alkali Cr.	2.25	7	5	1	6	250	247	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
2368	3	G. S. Mills	Spring, Sec 30, T. 31, R. 97 West	.5	2	1	1	6.66	$ 25	10	1900
2369	3	H. M. Bowers	Dick Cr.	1.5	4	2.5	2	8	750	115	1901
2370	1	John T. Grieve	Casper Cr.	1	4	3	1	7	300	86	"
2371	1	Wm. and Janet Grieve	Poison Spider Cr.	1.6	3.5	2.5	1	15	200	140	1900
2372	4	G. L. and M. Hennick	Green River	3.5	8	6	1.5	5	750	592	1902
2373	4	O. M. and P. P. Twichel	LaBarge Cr.	2.5	6	4	1	4	500	135	1901
2374	1	E. P. Hughes	Springs, Sec. 4, T. 24, R. 64	.5	3	2	1	100	50	60	1900
2375	3	J. M. White, Alex Alexander	Indian Cr.	1.5	3	2	1.5	10	750	100	"
2376	3	A. E. Chessman, J. M. White	Wood River	2	2.5	1.5	1	10	500	90	"
2377	3	A. E. Chessman, Miner Manrle.	" "	2	4	2.5	1.5	10	1,000	208	"
2378	3	J. W. Michie and H. A. Thomas	" "	7	5	3	1.5	10	1,000	380	1901
2379	4	Wm. A. Carter	Three springs, Sec. 33, Tp. 15, R. 118	.75					800		1900
2380	3	I. M. Graham	Long Cr	2.25	4	2.5	1	6.33	350	155	1902
2381	3	G. W. Jensen	Jensen Cr.	.75	5	3.5	1		150	160	1901
2382	3	A. C. Thomas and The Weld Co. Savings Bank of Greeley	Arm of Wood River	.5	2	1.5	1	5	250	55	1900
2383	1	Jennie Lany	South Fork Casper Cr.	1	5	3	1	10	250	115	1901
2384	4	Fritz Stender	Red Canyon Cr.	.875	5	4	1	8	175	108	"
2385	1	John Arnold	Deer Cr.	.375	4	2	1	8	50	27	1899

PERMITS TO APPROPIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2386	1	Mollie Coleman	Cottonwood Cr.	.737	6	4	1	8	$ 100	60	1900
2387	1	J. S. Grigg	Willow Cr.	1	4	3	1	5	250	68	1901
2388	3	G. W. Wise	Meeteetse Cr.	.75	3	1.5	1	10	300	45	1900
2389	3	John Shelly	Sulphur Springs Cr.	1.25	2	1.5	.5	10	200	210	“
2390	1	A. L. Evans, H. Clark, H. McFarland, J. Milliken, T. R. and Wm. Jackson, J. M. Green and Samuel Dickinson	Small Tributary Battle Cr.	.29	1.5	1	.5	20	75		1901
2391	3	Laing and Crossley	Lone Tree Cr.	3	4	4	1	20	300	319	“
2392	2	Mary E. Sutton	Main Powder River	1.1	6.6	5	1.5	4	500	210	1900
2393	2	A. E. and M. Sutton	Sutton Reservoir	1.75	5	4	1.5	8	1,200	265	1901
2394	1	James Canagher	Bear Cr.	.5	4	3	1.5	2.5	100	20	1899
2395	3	“ “	“ “	.75	2.5			20	100	30	“
2396	4	M. Madden and Woodruff	Poison Cr.	.5	2	2	1	10	50	46	1900
2397	1	Paul Morse	Taylor Cr.	1	8	6	1	10	150	240	1901
2398	1	Wm. Burkett	Elkhorn Cr.	.75	5	4	1	3	100	16	1900
2399	1	“ “	“ “	1.5	4	3	1	3	200	36	1901
2400	4	P. C. Hansen	Granite Cr.	2	7	6	1		250	250	“
2401	4	“ “	Two small streams, Sec. 24, Tp. 42 N., R. 117 W.	.5	3	2.5	1		50	30	“
2402	3	J. W. Cheever	Bad Water Cr.	1.43	4	3	1.5	6	400		“
2403	2.	Linna Madison	Crazy Horse Cr.	1.25	4	3	1	5	350	82	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2404	2	Linna Madison	Rattlesnake Cr.	.75	4	3	1	5	$ 300	36.25	1900
2405	3	Merrian, Madden & Woodruff	Poison Cr.								
2406	3	B. F. Ayers	No Wood Cr.	.75	4	3	1	6	500	74	1901
2407	1	J. W. Case	Brush Cr.	1	3	2	1	8	150	120	1900
2408	2	J. H. Foley	Big Draw Spring	1.75	5	3	1	10.56	500	88.5	1901
2409	1	F. A. and L. A. Newell	Antelope Cr.	2.25	5	4	1.5	7	800	297	1900
2410	1	Sarah A. Newell	Cottonwood Cr.	.721	4	3	1.5	6	400	69	1901
2411	3	E. E. Chatfield	Spring Cr.	2.25	6	4	1	6	300	168	"
2412	3	W. M. and M. J. Harvard	Deep Cr.	1.666	5	4	1	6.5	400	100	"
2413	1	E. M. Yates	Laramie River	2.5	6	4	1	2.64	1,000	103	"
2414	1	Jos. Clarkson	Poison Spring Cr.	1.5	3	2	1	8	150	163	1900
2415	3	Wm. M. Harvard	No Wood River	5	5	4	1	6.5	1,200	180	1901
2416	4	S. N. W. Butterfield	Black's Fork River	2.59	5	4	1	8	150	160	"
2417	4	James Francis	Raymond Cr.	3.25	4	3	1.5	8	200	152	"
2418	2	M. E. Bard	Jennings Gulch	4	4	2	1	15.48	150	75	1900
2419	4	Agnes Cunningham	S. Channel Smith's Fork	.017	4	3	1	4	20	160	"
2420	4	J. L. Stevens	E. " " "		2	1.5	1	8	25	52	"
2421	3	H. O. and M. L. Thompson	Sage Creek	2.5	6	4	1	6	500	520	1901
2422	3	J. B. Okie	Alkali Spring	.1	.5	.5	.5	12	50	15	1900
2423	3	G. G. Thompson	Bennett Cr.	1	5	4	1	8	100	150	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2424	3	E. A. Vickery, H. E. Bunn, B. T. Jachary, P. Black, R. B. Heritage, W. C. Hinshaw and C. B. Faulkner....	Stinking Water River....	3.25	11	9	1	20	$ 500	743	1900
2426	3	N. Cunnington, A. Anderson and G. West	Big Horn River..........	1.75	10	8	1.5	3.2	450	406	1902
2427	2	L. L. Gantz	Buffalo Cr..............		3	2	1	7	200	80	1900
2428	2	M. E. Gantz..................	Cottonwood Cr...........		3	2	1	7	200	52	"
2429	4	Chas. Pate	Pate Springs	4 feet	1.5	1	.5	8	5	49	"
2430	3	G. G. Marston................	North Fork Stinkingwater		4	3	1	5.28	700	175	1902
2431	3	C. B. Williams	Beaver Cr...............	1.25	4.5	2.3	1	8	300	53	1900
2432	3	Frank Bodie..................	Dry Cr. (East Fork)......	.75	3	2	1.5	16	200	15	"
2433	2	E. S. Simmons................	South branch south fork Crazy Woman	1.5	5	3	1	5.28	400	71.8	1901
2434	3	Joe Johns....................	Fourth fork Dry Cr......	1.375	4	2	1.5	20	300	25	1900
2435	3	" "	Branch Dry Cr..........	.25	3	2	1.5	30	100	25	"
2436	3	Wm. Madden..................	Dry Cr..................	.75	5.5	3.5	2	16	50	30	"
2437	2	Carrie S. Simmons	Spring, Sec. 22, Tp. 46, Range 83	.75	5	3	1	5.28	200	112.8	"
2438	3	Otto Chandler	Badwater Cr............	2	5	2.5	2	16	600	35	1901
2439	1	T. G. Powers.................	Rawhide Cr..............	1.057	13	10	1	2	600	680	"
2440	2	J. S. McWilliams	Steel Cr................	1	5	3	1	10.56	200	22.8	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2441	1	Henry Barnhart	Luman Cr.	.75	3	2	1.5	10	$ 300		1901
2442	3	W. O. and Ella Moon	Gooseberry Cr.	3	10	8	1	3.2	500	375	"
2443	3	H. G. and G. Hillberry	" "	2.5	8	7	1.5	3	400	388	"
2444	3	O. B. Mann	Buffalo Cr.	.75	3	2	1	7.5	100	38	"
2445	1	Major Ormsby	Spring Cr.	.625	3	2	1	40	150	24	1900
2446	4	J. W. Adler	Little Gros Ventre	1.5	6	5	1.5	12	400	140	1901
2447	3	Minnie McMannis	Owl Cr.	1.25	5	3	1	4	400	112	"
2448	1	J. S. Vidal	Black Rock Cr.	.75	4	2	1	5	150	39	1900
2449	3	B. Martin, E. A. McCumber and Chas. McCumber	Mud Cr.	3	7	1	5	.18	600	397	"
2450	1	J. U. Woodbury	Snake River	3.5	8	6	1.5	3	1,500	300	"
2451	2	J. Faehndrich Ditch Company	Fiddler Cr.	4.25	4	3	1	8	1,500		1901
2452	1	G. G. VonOrtwick	Laramie River	1.113	3.33	2	.66	2.5	250	50	1900
2453	3	H. A. Munstermann and C. Fredericks	Grey Bull River	1.5	3	2	1	10.56	150	84.5	1901
2454	2	Jacob Affalter	North Fork Powder River	2.5	6	4	1	5.28	750	129.1	"
2455	4	Hudson W. Darrah	Carter Cr.	2	4	2	.66		250	60	1902
2456	4	Jeremiah Godfry	Spring Cr.	1	5	3	1.5	10	100	77.5	1900
2457	1	H. H. Johnston	Spring, Sec. 36, Tp. 19, R. 63 W.						25		"
2458	4	Orson Strong	Smith's Fork Cr.	.068	2	1.5	.66	6	25	33	1901
2459	2	J. L. Mitchell and H. Corbett	Redwater	2.25	3	2	1	3.5	300	70	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2460	2	E. C. Daley	Branch Old Woman Cr.	.5	3	2	1	6	$ 150	5	1900
2461	1	W. Hargraves	Spring, Sec. 14 and 15, T. 28 N., R. 63 W.	.75	3	2	1.5	6	300	40	“
2462	2	Jesse M. Cornelison	Hay Cr.	2.125	4	3	1	8	300	210	1901
2463	4	T. A. Welch	Lane's Meadow Spring	1	3	2	1.5	6	300	400	“
2464	3	C. W. Hooker	Stinkingwater River	1.75	7	5	1	6	300	308	“
2465	3	D. H. Wilson	Meeteetse Cr.	1.75	6	4	1		300	138	“
2466	1	G. D. Nicholson	Sage Cr.	.75	3	2	1	14	100	70	“
2467	3	D. H. Wilson	Meeteetse Cr.	1	5	3	1	10	200	87	“
2468	3	C. P. Sheehan	Sage Hen Cr.	.88	5	2	1	5.28	90	108	“
2469	3	L. and B. Short and C. Heiden	Owl Cr.	1.5	5	3	1	5	250	169	1900
2470	3	D. W. Cook and R. M. Ellis	Paint Rock Cr.	1.75	15	4	5.1	6	600	236.4	1901
2471	1	U. P. Railroad Co.		1.34					450		1899
2472	3	Patrick McKenna	Diamond Spring	.256	4	1	1	5.28	50	13	1900
2473	3	“ “	East Diamond Springs	.55	4	1	1	5.28	100	31	“
2474	3	F. A. Whitney	Rawhide Cr.	1.5	3	2	1.5	10	250	50	1901
2475	1	Ella A. Hagge	Elkhorn Cr.	1.77	7	5	1	6.6	500	72	1900
2476	1	F. J. Hagge	“ “	1.643	7	5	1	6.6	350	117	“
2477	1	Chris Gabrielson	Gabrielson's Spring	.375	2	1.5	1	2	20	79	“
2478	1	John Clark	Cottonwood Cr.	1.25	3	2	1	7	300	105	1901
2479	1	Bertha Clark	Davis Cr.	1	3	2	1	7	300	123	“
2480	2	A. D. Brown	Sage Hen Cr.	1	3	2	1		300	65	“

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2481	2	W. C. Robinson	Flood water in South Fork Hay Cr.	.118	4	3	2	7	$ 75	80	1900
2482	2	" "	South Fork Hay Cr.	.848	4	3		5	200	80	1901
2483	3	J. M. Reid	Crooked Cr.	1	5	2	1.25	8	1,200	215	"
2484	1	J. L. Parker	Spring, Sec. 14, Tp. 16, R. 85 W.	.5	4	2	1	5.28	200	40	1900
2485	2	J. L. Pate	Old Woman Cr.	.75	2.5	2	1.5	10	100	20	1901
2486	1	E. M. Irwin	N. W. of Little Canyon Cr	1.25	4	3	.33	3	200	100	"
2487	4	T. S. Taliaferro, Jr	Silver Cr.	.956	5	4.5	1	13.5	200	160	"
2488	3	J. Prettyman	Grey Bull River	1.5	3	2.5	1.5	12	100	40	"
2489	1	John Nolan	Spring in Dry West Sage Hen	.75	5	2	1	5.28	75	59	"
2490	4	E. E. Hill	Fish Cr.	1.25	5	4	1	6.66	200	300	"
2491	1	J. L. McIntosh	Alla Springs	.6	5	2	1	5.28	60	20	1900
2492	1	Nora McKinney	Sweetwater River	.125	2	1.5	.8	5	25	12	1901
2493	1	" "	" "	.375	3	2	1	8	175	24	1900
2494	1	Herman Weber	Spring Wild Cat Gulch	.587	2	.5	2.5	10	300	20	1901
2495	4	Q. W. Garner	Jones Cr.	15 feet	4	3	1	7	20	160	"
2496	3	J. W. Stuchell	Meadow Cr.	1.75	4	2	1.8	25	200	42	"
2497	3	George Driver	" "	1.5	4.5	2.5	2.25	10	500	61	"
2498	3	John Ivens	East Fork Cottonwood	1.25	3.5	1.5	1	8	125	40	"
2499	3	Wm. Fieldon	Box Elder	1.25	4	2	1	8	150	65	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2500	3	John Carmody	East Fork Cottonwood	1.25	3.5	1.5	1	8	$ 150	60	1901
2501	1	T. S. Garratt	North Laramie	.5	4		1	15	100	30	"
2502	1	John Wails	Middle Cottonwood Cr.	1.66	5	3	1	10.56	200	59	"
2503	1	Otto Olson	Seepage water	.75	5	3	1	20	30	160	1900
2504	3	R. M. Kent	Big Horn River	1.25	6	4	1	3	500	134	1901
2505	1	Bernice Grazley	Reservoir	1.5	3	2	1	5	200	194	"
2506	1	J. H. Bowles	South Fork Little Medicine Cr.	1	3	2	1	7	150	170	"
2507	1	" "	South Fork Little Medicine Cr.	1	3	2	1	7	150	95	"
2508	2	Ogalalla S. and C. Co.	Water holes on main branch Little Wind River								
2509	2	" " " " "	Red Rocks Springs								
2510	2	" " " " "	Pine Tree Spring								
2511	2	" " " " "	Spring, South Fork of Little Wind River								
2512	2	" " " " "	Spring at Forks of Little Wind River								
2513	2	" " " " "	Spring, Middle Fork Little Wind River								
2514	2	Joseph Bellivean	Redwater	1.087	3.5	2		4	800	60	1901
2515	1	D. J. Sheehan	Sweetwater River	2.95	9	4	1	5.28	400	407	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade Feet per Mile			
2516	4	A. T. and J. T. F. Barry	Craven Cr.	1.5	5	3	1	8	$ 150	107	1900
2517	4	E. H. Shidler	Spring branch N. Piney Cr	.75	4	3	1	22	159	90	1901
2518	4	" "	" " " " "	.375	3	2	1	30	100	50	1900
2519	4	" "	North Piney Cr.	7	7	5	1	16	250	160	1901
2520	4	David Menkiney	Little Bitter Cr.	1.326	2.5	2	1.16	27	300	160	"
2521	3	Russell Kimball	Pat O'Hara Cr.	1.125	4	3	1	9	500	177.5	"
2522	1	F. W. Johnston	Fish Cr.	.363	3	2	1		40	60	1900
2523	1	Amelia Davis	Duck Cr.	.75	5	3	1	8	50	25	1901
2524	1	" "	" "	1.75	6	4	1	8	150	86	"
2525	4	H. J. B. Taylor, Dell Gehove	Smith's Fork (N. C.)	.79	5	4	1	10	40	180	"
2526	1	Chas. Scharick	Spring Cr.	1.952	3.5	3	.66	6	75	60	1900
2527	1	" "	" "	.421	2.5	2	.66	6	50	40	"
2528	4	Wm. H. Byrne	Albert Creek	.028	3	2.5	.75	6	15	46	"
2529	4	" " "	Seepage from Albert Cr.	.137	2.5	2	.75	6	10	75	1901
2530	4	" " "	Spring, Sec. 17, Tp. 16, R. 118 W.	.028	.66	.5	.25	8	5	.5	1900
2531	4	W. H. and C. L. Byrne	Little Muddy Cr.	.59	5	4	1	8	75	107	1901
2532	4	Wm. H. Byrne	Spring, Sec. 17,								
2532			Tp. 16, R. 118 W.	.018	.66	.5	.25	8	2	1	1900
B	1	S. L. Hawes	Dry Cr.	1.5	4	3	1	7	300	245	1901
2533	3	D. E. Fuller	Bad Water Cr.	1.75	6	5	1	6	500	137	1902
2534	1	Fred Katzer	Long Draw Cr.	1.75	6	4	1	5	250	140	"

PERMITS TO APPROPIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2535	4	Rose Cranney	Spring Cr.	.25	2	1	1	20	$ 25	30	1902
2536	1	A. M. Phelps	Sybille Cr.	1.25	5	3	1	5.28	100	68.1	"
2537	1	Eagle Mt. Cattle Co.	Antelope Cr.	.5	4		1	7	200	30	1900
2538	3	E. E. Lundgreen	West Bridger Cr.	1.75	4	2	1	4	250	117	"
2539	3	Wm. M. and Lucy Hale	Owl Cr.	2.5	8	6	1.5	4	900	488.65	1902
2540	2	J. G. Davis	Beaver Cr.	1.987	5	4	1.5	6.66	600	77	"
2541	1	Milton Sowash	Taggert Cr.	.25	1	1	5	6	50	12	1900
2542	1	J. H. McElhany	Seepage water Sec. 4, Tp. 24, R. 68	.75	5	3	1	25	25	80	"
2543	4	J. L. Bess and C. Snow	Green River	3	10	8	2	3	1,500	773	1901
2544	4	G. M. and H. Winkeman, C. F. Hackenburg, Wm. S. Field	Cottonwood Cr.	2.5	11	8	1.5	2.7	1,200	868	1902
2545	3	Riley Coop	Kirby Cr.	.912	3.5	2	2	6.66	250	44	1901
2546	2	Eliza J. Watt	Box Elder	2	6	4	1.5	4.5	600	180	1900
2547	3	E. C. Cummings	Badwater Cr.	1.25	4	3	1	6	600	110	1901
2548	3	J. E. Jensen	Line Cr.	2	7	5	1	8	300	308	"
2549	3	Matt Wagoner	Little Rocky Cr.	2	4	3	1	6	500	116	"
2550	3	Archy Beaton	New Myers Cr.	.312	3	2	1	8	50	15	1900
2551	3	John Tighe	Paint Cr.	1.25	5	3	1	.5	150	92	1901
2552	3	Archy Beaton	Sheep Cr.	1.25	5	3	1	8	200	123	"
2553	3	M. T. L. Davenport	Paint Cr.	.75	5	3	1	10	100	65	"
2554	3	S. S. Cortson	" "	2.5	5	3.5	1	8	300	236	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
2555	1	Fred Viele	Cottonwood Cr.	4.43	6	3	1.5	5.28	$ 450	160	1901
2556	2	Ernest Bostleman	Badwater Cr.	1.75	4	3	1	7	300	66	"
2557	2	" "	" "	1.25	4	3	1	7	200	70	"
2558	1	H. A. Faulkner	Mudd Springs	.37	2	1.5	1	5	25	17	1900
2559	3	Thos. Balmer	Spring Cr.	1	3	2	1	15	100	91	1901
2560	4	Wm. S. Field	Cottonwood Cr.	.75	5	3	1.5	13.3	75	135	"
2561	3	Wm. Madden	Dry Cr.	.625	3	2.5	1.5	6.66	300	46	"
2562	3	Otto Chandler	" "	.887	2.5	2	1.5	6.66	150	29	"
2563	3	F. A. Jenks	Trapper Cr.	1.5	4	2	1	60	300	63	"
2564	4	E. T. Campbell	Spring Cr.	2	6	4	1.5	8	200	220	1900
2565	3	F. C. Bartell	North Fork Owl Cr.	1.5	5	3	1	10	200	77	"
2566	2	George Berhofer	Springs, Sec. 6, Tp. 51 N., R. 61 W.	2	1.5	1	1	80	200	40	1901
2567	1	J. I. Brown	French Cr.	2.5	4	2	2	6	1,500	160	1902
2568	4	Chas. Kingston	Shoshone River	30.48	25	15	5	2	40,000	17,755	1904
2569	3	Wm. I. Lewis	Lysite Cr.	.9	2.5	2	2	6.66	200	38	1901
2571	3	Quincy Hooker, Alexander Roane, Jas. Roane, G. W. Roane, Edw. Roane, Bertha Roane, J. P. Thomas and E. Hesser	Stinkingwater River	7.25	10	9	1.5	3.5	4,000	1,105	Not Approved
2572	3	Wm. I. Lewis	Lysite Cr.	.775	3	2	1.25	6.66	200	20	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2573	4	DeF. Richards, Jesse Knight and F. Chatterton	Big Sandy River		45	35	4	1.5	$ 100,000	75,000	1904
2574	4	DeF. Richards, Jesse Knight and F. Chatterton	" " "		45	35	4	1.5	100,000	100000	1904
2575	3	Frank A. Merriam	Iron Springs	.25	1.5	1	1	10	50	8	1900
2576	4	J. H. Martin	Spring Cr.	.234	2	1.5	1	14	100	120	1901
2577	4	" "	Meadow Springs	1.5	2	1.5	1	20	200	160	"
2578	3	Christ Heiden, Jr.	North Fork Owl Cr.	.75	4	2	1	12	100	75	"
2579	4	W. L. Turpin	Little Beaver Cr	2	5	3	1	8	150	80	"
2580	4	Wm. G. and Cola Warren	North Piney Cr.	2.5	7	5	1	22.7	800	340	"
2581	4	L. E. Lockwood	Trail Cr.	1.75	6	4	1	10.56	250	235	1903
2582	4	Vina C. and F. L. Bedier	North Piney Cr.	1	6	4	1	8	350	439	1901
2583	2	J. K. Potts	Pass Cr.	1.5	6	4	1	5.28	700	92	1902
2584	4	W. H. Wyman	Garet Springs and surplus and waste water of Birch Cr.	2.75	4	3	1	6.5	600	300	"
2585	2	J. M. Rouser	Redwater Cr.	1.75	2.5	2	1	60	150	50	1901
2586	3	Walter Punteney	Bridger Cr.	1.25	4	2.5	.3	3.33	350	57.45	"
2587	4	M. W. Pettigrew	Spring Cr.	1.5	8	6	1	15	100	300	"
2588	3	H. W. Myers	Alkali Cr.	1		4	1	6	200	59	"
2589	3	G. L. Berry	Bennett Cr.	2	4	3	1.5	7	500	320	"
2590	4	J. C. Reynolds	Duck Cr.	1.5	10	8	1	8	600	290	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2591	4	F. M. DeLand	Snake River	3	10	8	1.5	5.28	$ 300	305	1902
2592	1	W. S. Earhart	Seepage water, Sec. 34, Tp. 25, R. 86	.284					130	30	
2593	1	John Goetz	Sand Cr.	2	9	7	1	5	600	225	1900
2594	2	G. F. Hobbs	Rawhide Cr.	328	5	3	1.5		500	8	1901
2595	1	G. A. Froehner	Stinking Cr.	.806	5.5	3.5	1	11	125	62	"
2596	3	H. L. Kenison and F. G. Huntington	Grey Bull River	1.5	5	3	1	5.25	150	185	"
2597	3	Edward Young	Gable Springs	1.5	3	2	1	14	50	45	"
2598	3	" "	Orchard Springs	.5	3	2	1	14	50	5	"
2599	1	John Arnold	Springs, Sec. 33, T. 33, R. 79	.5	1	.25	1	7	25	58	"
2600	4	F. P. Hancey	Soldier Cr.	.5	3	2	.5	15	50	50	"
2601	1	Lynn Roberts	Dry Cr.	2	5	2.5	1.5	1.33	500		"
2602	2	F. E. Jones	Young Woman's Cr.	2	5	4	1	7	500	30	
2603	3	Ross Lambert	Dry Cr.	.781	2.5	1	1	13.33	200	19	"
2604	1	J. H. Otis	South Birch Cr.	1.5	6	5	1	12	250	320	"
2605	1	J. H. King	Brush Cr.	.75	3.5	3	.66	20	75	120	"
2606	3	Lucy L. Morrison	Spring running into Ditch Cr	2.375	2	1	1	25	200	33	"
2607	3	" " "	West Bridger Cr.	1.25	2.5	1.5	1.5	13.33	250	76	1902
2608	3	" " "	" " "	.583	2.5	1.5	1.5	13.33	200	25	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2609	2	J. A. Young, Wm. H. Robbins and Mrs. E. Elder	Billy Cr.	.5	4	2	1	10.56	$ 500	98.5	1901
2610	4	Chas. Ball	Cottonwood Cr.	1.25	5	3	1	6	200	60	"
2611	1	Robt. Williams	Willow Cr.	.5	5	3	1	8	100	16	1900
2612	4	J. W. Byrne	Hog Back Springs	.56				1	250	1	1901
2613	2	Mary C. Vest	Spring, Sec 13, T. 51, R. 63	.34					250		"
2614	3	J. P. Parshall	No Wood River	2	10	8	1.5	3	1,500	312	1902
2615	2	W. H. Robbins and O. E. Elder	Spring Cr.		4	2	1	10.56	300	51.5	1901
2616	4	Jas. H. Claunch	Cottonwood Cr.	1	4	3	1	6	200	135	"
2617	3	J. W. Chapman	Pat O'Hara Cr.	2.25	6	4	1	10	700	122	1900
2618	1	Frances G. McCrossin	Sawmill Canon Cr.	6	5	3	1	30	200	26	1901
2619	1	Mary Wood	Wood Cr.	.25	4	2	1	16	50	9	"
2620	1	Wm. B. Wood	" "	.3	4	2	1	16	100	57	"
2621	1	Mary Wood	" "	.25	4	2	1	16	75	18	"
2622	1	" "	" "	.2	4	2	1	16	26	100	"
2623	2	Mrs. B. Connelly	Box Elder Cr.	1.5	6	4	1	5.28	300	38.7	"
2624	3	David Davis	Bad Water Cr.		4	2.5	1.5	6.66	350	32	"
2625	3	Colin Campbell	Lysite Cr.	1.875	3.6	2	1	13.5	300	103	1900
2626	1	A. J. Cunningham	Salt Cr.	.5	3.5	2	1	12	75	41	"
2627	1	" "	" "	.5	3.5	2	1	12	75	34	"
2628	1	Chas. K. Bucknam	Middle Casper Cr.		3.5	2	1	10	150	56	"

PERMITS TO APPROPIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2629	4	J. H. and C. Anderson	LaBarge Cr.		8	6	1.5	4	$ 500	345	1901
2630	3	J. W. Chapman	Pat O'Hara Cr...........	1.25	5	4	1	6	300	40	"
2631	3	" "	Blame Cr...............	.5	4	3	1	8	100	35	"
2632	3	Geo. Wise....................	Franc's Fork Cr.........	1.5	7	5	1	5.25	150	191	"
2633	4	John Emery..................	North Twin Cr..........	.5					50	40	"
2634	1	Mary A. Thornton	Foote Cr,...............	3	6	3.5	1.5	3	800	500	
2635	3	J. A. Barker..................	Bridger Cr..............	.61	3.6	2	2.5	6.33	200	29	"
2636	1	Jane Wagoner................	Cedar Cr................	.75	2	2	1	100	25	120	"
2637	4	E. W. L. Green, John Clifton..	West branch Sheep Cr....	4.5	4	3	1.5	.56	350	800	1902
2638	1	O. S. and L. H. Marshall	Sheep Cr................	13	10	8	2.5	4.5	4,000	9,258	1903
2639	4	J. C. Anderson	Gros Ventre River.......	1.75	10	8	1	10.56	300	200	1901
2640	1	Willis Rogge	Dry Laramie Cr.	1.5	5	3	1	5	100	70	"
2641	1	D. Johnson..................	Springs, Sec. 29, T. 21, R. 60 West								1902
2642	1	David Johnson, Wm. Johnson .	Springs, Sec. 8, T. 21, R. 60								1900
2643	1	John Grieve..................	Cottonwood Cr..........	.5	3	2	1	6	100	32	1901
2644	4	Joseph M. Boulter............	Muddy Cr...............	1.5	4	3	1	34	400	346	1902
2645	3	Laban R. Hillberry	Grass Cr................	6	14	12	2	4	2,500	833	"
2646	1	T. J. Rutledge	Muddy Cr................	1.795	5	3	1	10.56	300	40	1901
2647	2	John L. Olson................	Pass Cr.................	.75	3	1.5	1	16	100	24	1900
2648	1	Sherman Lute	Cedar Cr................	.5	1.5	1	.33	12	150	30	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
2649	2	J. C. Gupton	Springs, Sec. 1, Tp. 53, R. 73 W.	.625		.25	.167	30	$ 200		1901
2650	1	Mary McFarland	South Middle Spring Cr.	.75	3	2	1	15	50	160	1900
2651	4	Vilate White	North Spring Cr.	.25	3	2.5	1	15	50	160	1902
2652	3	N. H. Gable	Grass Cr.	.937	4	3	1	18	200	62.5	1901
2653	4	Jane Wagoner	Cedar Cr.	.333	1	1	.5	40	10	20	1900
2654	1	Martin Schwab	Salt River	2	14	12	3	7	250	440	"
2655	4	Andrew J. Kennaday	North Fork Cedar Cr.	.75	4.5	3	2		200	150	1902
2656	4	Oscar S. Reddick	Horse Cr.	2.25	8	5	1.5	5.28	1,000	900	
2657	1	Jas. S. Alexander	Cottonwood Cr.	.375	6	4	1	10	150	90	1901
2658	1	Frank Deuel	" "	93 rds.	1.5	1	1.25	5.28	125	7.5	"
2659	1	" "	" "	90 rds.	1.5	1	1.25	5.28	100	9	"
2660	1	" "	" "	85 rds.	1.5	1	1.25	5.28	54	5	"
2661	1	Dwight P. Smith	Little Laramie	1.5	4	3	1.5	5	300	117	"
2662	1	Neal Matheson	Bar-M Cr.	.75	4	3	1	7	100	62	"
2663	1	Nick Lundquist	Sand Cr.	8.75	4	3	1	5	300	132	"
2664	1	Ira S. Bunn	Cottonwood Cr.	1	3	2	1	6	200	175	"
2665	1	Rodney W. Darst	Dry Laramie Cr.	1	5	3	1	10	50	130	1900
2666	4	Frank Sebastian	Gros Ventre River	4	12	10	1.5	5.28	1,000	710	1903
2667	4	Ed. Ramey	" " "	4	11	8.5	1.33	5.28	900	295	1905
2668	4	" "	" " "	1.5	6	4	1.5	10.56	150	160	1902
2669	1	Uree D. Horn	Deadwood Cr.	.75	3	2.5	.66	14	100	15	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2670	1	Levi Simmons	Big Twin Cr.	1	6	4	2.5	66	$ 300	580	1902
2671	3	Wm. H. Gable	Grass Cr.	1.375	4	3	1	13.5	250	54 5	1901
2672	3	" " "	Desney Cr.	1.312	4	3	1	16.66	250	25	"
2673	4	Curtis Moore	West Bridger Cr.	1.25	4	3	1	25	300	42	"
2674	3	T. B. Hallett and N. H. Brown	Sawmill Cr.	4.5	8	8	1.5	8	5,000	1,600	1903
2675	4	Isaiah Butterworth	Moultree Spring	2	6	5	1.5	7	200	440	1902
2676	1	Harry S. Yount	Halleck Cr.	.25	2.5	1.5	1	15	150	30	1900
2677	3	John S. Day	Bridger Cr.	4.375	8	6	2	.75	1,500	376.5	1902
2678	2	Oliver N. Amsworth	North Redwater	1	3	2.5	1	5.5	100	25	1901
2679	4	M. Robinson	Big Cow Cr.	.75	5	4	1	6.66	175	160	"
2680	3	D. J. Jones	East Sage Hen	.58	5	2	1	5.28	75	27	"
2681	3	Dennis Crowley	Tough Cr	1.5	3.5	2.5	1.5	6.66	300	47.5	"
2682	4	Albiather Jones	Springs, Sec. 4, Tp. 12, R. 105 W.	1	2	1.5	1	125	300	160	1903
2683	4	" "	Springs, Sec. 3, Tp. 12, R. 105 W.	.689	2	1.5	1	125	300	100	"
2684	3	A. A. Smith	Elk and Deer Reservoir	1.75	5	3	1	10	150	177	1901
2685	3	Fay Finland	White Cr.	2	5	4	1	6	300	113	"
2686	4	Wm. R. Malonek	Silver Cr.	.954	5	4.5	1	13.5	250	160	1902
2687	1	Edward Held	Cottonwood Cr.	1	30	24	9	1.33	200	60	1901
2688	1	J. R. Karman	Bolton Cr.	.625	5	3	1	11	150	85	"
2689	3	Wm. H. Gable	Jones Cr.	3.625	4	3.5	2	6.66	600	223	1902

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2690	3	Wm. H. Gable	Jones Cr.	.75	3	2.5	1	13.33	$ 200	19	1901
2691	3	Joseph Dolis	Bridger Cr.	1.125	3.5	3	1	5	390	86	"
2692	3	J. B. VanOrsdale	Trapper Cr.	.75	5	3	1	5.25	100	40	"
2693	1	Wm. F. Gorgués	Fish Cr.	1	6	4	1	7	300	64	"
2694	4	Benj. Broadbent	Spring Cr., Sec. 12, T. 34 N., R. 119 W.	1	3	2	1	15	80	160	"
2695	1	Hark C. Paulson	Snow Gulch, Sec. 6, Tp. 18, R. 81 W.	.5	2	2	1.33		100	75	"
2696	1	" " "	Fox Cr.	.5	2	2	1.33		100	70	"
2697	2	A. Webster	Gulch, Sec. 14, T. 53, R. 61	.687	4	3		8	300	20	"
2698	4	J. L. Elder	South Beaver Cr.	.75	5	3	1	8	100	220	"
2699	4	Chas. O. Elder	" " "	2.5	6	4	1	8	400	565	1902
2700	4	Fred A. Ballon	Duck Cr.	2.25	10	8	1	8	500	315	"
2701	3	John Clark	Cottonwood Cr.	1.5	3.5	3	1.66	15	300	75	1901
2702	3	Big Horn Ditch Co.	Big Horn River	22	22	10	6	2	40,000	17,000	1905
2703	2	Philip Hamm	Reservoir, Sec. 25, Tp. 56, Range 84	1.25	5	2.5	1.5	7	300	15	1900
2704	2	" "	Reservoir, Sec. 25, Tp. 56, Range 84	1	5	2.5	2.5	7	100	10	1901
2705	2	Lenora J. Draper	Sundance Cr.	.189	.66	.5	.08	100	150	3	1900
2706	2	Isaac W. Blake	Sand Cr.	.568	2	1.5	1	60	300	50	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2707	1	J. P. Ibson	Spring, Sec. 15, T. 29, R. 100 W.		.167			8.8	$ 400		1901
2708	1	D. E. Thompson	Rock Cr.		3	3	1.66	10	2,525		"
2709	3	Chas. H. Eads	Sulphur Springs		3.5	2.5	2	13.5	300	21	"
2710	2	Edw. Towns	Ash Cr.	1	3	2	1.5	15	500	150	1902
2711	2	" "	" "	1	3	2	1.5	15	400	100	"
2712	4	S. L. Adams	Spring Cr.	.75	5	4	1	7	150	80	"
2713	1	Donald McPhail	Spring, Sec. 7, T. 17, R. 84		4	2	1.5	3	100	180	1901
2714	3	Marion Williams	Carter Cr.						200	85	1903
2715	3	H. W. Darrah	" "	3	7	4	1.5	5.28	350	230	"
2716	1	Thos. Cooper	Sand Springs	1.75	7	2.5	1.5	4	300	33	1902
2717	2	Oliver Kerr	Kerr Reservoir, Sec. 22, Tp. 56, Range 85	1.125	4.5	2.5	1	6	75	50	"
2718	1	Jas. Dolan	Spring, Sec 23, T. 13, R. 61	.033	4	24			50		1901
2719	1	Carl Piper	Spring, Sec. 26, Tp. 15, R. 73 W.	.081	.66	.66	.66	6	25	9	"
2720	1	" "	Spring Sec. 26, Tp. 15, R. 73 W.	.077	.66	.66	.5		25	6	1900
2721	4	John Cherry	Gros Ventre River	2.5	7	5	1	10.56	250	160	1901
2722	3	Thomas N. Smith	Badwater Cr.	1.25	3	2	1	4	200	70	"
2723	3	Horace F. Tyrrell	" "	1.25	4	3	1	4	600	145	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2724	3	Frank Pfaff	Powder River	2.067		2	1	6	$ 480	111	1900
2725	1	E. M. Hicks	Spring Cr.	1.5	4	3	1	5	200	160	1901
2726	2	Augustus Fraker	Powder River	1.225	4	3	1	6.66	300	47	"
2727	4	Ira J. Ames	Steward Cr.	2.5	4	3	1	30	100	160	"
2728	4	T. W. Lloyd	Little Cow Cr.	1.25	5	4	1	6.66	300	150	1902
2729	1	J. P. Newell et al	North Laramie River	2.5	7	5	1.25	4	500	308	1901
2730	1	Thomas Bretton	Deadhead Cr.	.625	5	2	1.5	10	100	25	"
2731	1	Peter Hansen	Cottonwood Cr.	1.5	4	3	1	7	200	86	"
2732	4	F. K. Cranney	Salt River	1.25	8	6	1	10	50	85	1902
2733	4	F. P. Hancey	Spring Cr.	.25	2.5	2	1	18	40	80	"
2734	2	D. E. Goddard	Old Woman Cr.	1.375	3	2	1.5	6	250	10	"
2735	4	Julia B. Nichols	South Cottonwood	1	6	5	1	8	300	255	"
2736	1	L. L. Fulton	Box Elder Cr.	.25	4		.83	5	150	38	1901
2737	1	Chas. A. Fauver	Little Medicine Bow	1	3	2	.83	6	300	100	1900
2738	1	" " "	" " "	1	3	2	.83	6	300	60	"
2739	3	Wm. F. Cody	Rock Cr.	.5	3	2	1	5.28	100	40	1901
2740	2	Edgar Gossett	Crazy Woman Cr.	2.5	1.5	.5	1	10	500	70	"
2741	1	Grand Encampment Town Co.	Grand Encampment Cr.	2.49	5	2	3	21.17	22,700		1901
2742	2	Leroy Keys	Washta Spring	.25	1	1	.5	.3	200	5	"
2743	1	Jas. Cerragher	Bear Cr.	1.25	3	2	1	8	50	8	"
2744	1	Alma J. Ferguson	Springs, Sec. 3, Tp. 16, R. 73 W.	.912	3	2	1	4	225	60	1900

PERMITS TO APPROPIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2745	4	J. H. Nibarger	Smith's Fork Cr.	.016	4	3	1	10	$ 20	160	1901
2746	3	L. G. Wildes et al.	Grey Bull River	1.5	3	1.5	1.5	10	250		"
2747	2	John Storrie	Hat Cr.	.63	6	4	1	5.8	75	64	
2748	2	W. J. Van Ness et al.	Sheep Cr.	4.5	5	3	1	10.56	1,500	880	1902
2749	2	Wm. J. Brock	Dry Cr.	.05	3	3	1	10	200	65	"
2750	2	W. H. Wilkerson	Tetley Springs	.25	2	1	.5	8	50	10	1901
2751	2	Jacob Mill	Big Lightning Cr.	2.5	3	2	2	4	500	70	"
2752	2	Ella Godfry	Dry Cr.	.062					50	1	"
2753	4	C. H. Fredell et al	South Cottonwood Cr.	3.5	8	6	1.5	8	600	1,345	1902
2754	1	O. G. Johnson	South Fork Powder Cr.	1.25	4	2	3	7	150	10	"
2755	1	" "	Kidd Spring Cr.	.75	4	3	1	7	100	20	1901
2756	2	Robt. C. Taylor	Taylor Springs	.75	2	1	.5	12	150	55	"
2757	4	A. T. McLaughlin	Limestone Spring Cr.	1.75		3	1	6	150	280	1900
2758	4	Robt. H. Hodge	Stewart Cr.	1	4	3	2	15	200	80	1901
2759	4	Frank Bail	Horse Cr.	.375	6	4	1	5.28	200	290	"
2760	2	J. G. Sheldon	Sheldon Cr.	1.5	4	3	1.5	60	300	80	1902
2761	2	Sophie Huntington	Amsden Cr.	.094	4	2	1	32	200	70	1901
2762	1	Robt. Grieve	Grieve Cr.	1.25	4	3	1	7	150	42	1902
2763	3	Jos. Allemand	Otter Cr.	.75	3	2	1	20	150	45	"
2764	3	Hester Allemand	" "	1.75	3	2	1	15	250	68	"
2765	2	Colorado Colony Ditch Co.	Cross Cr.		6	6	2		2,000	7,160	"
2766	1	Chas. Ander et al	Ledge Cr.	2	4	3	1	7	500	182	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2767	1	W. H. Bond	Willow Cr.	.217	4	3	1	10	$ 200		1901
2768	2	Geo. W. Moore	Powder River	8.15	6	5	1.5	6.66	2,000	350	1903
2769	1	Robt. Z. McCoy	Battle Cr.	.75	.5	3	1	26.4	600	160	1902
2770	2	Chas. Srubbs	Sheep Cr.	1.375	3	2	.66	12	150	70	1901
2771	1	Lewis J. Woods	Rooster Cr.	1	4	3	1	7	150	46	1902
2772	1	Claude Stevens	Laramie River	.75	5	3	1	5	75	45	1901
2773	1	John Miller	Wallace Cr.	1.25	4	3	1	7	1,300	38	1902
2774	1	Mary A. Thornton	Foote Cr.	3	6	3.5	1.5	13	800	500	1901
2775	4	Martin Schwab	Smith Cr.	1.25	5	3	3	10	100	65	“
2776	1	Louis J. Bush	Big Laramie River	12.3	15	12	2	2	4,000	2,737	1902
2777	1	Jas. B. Grieve	Cabin Cr.	1.5	4	3	1	6	1,000	73	“
2778	1	Wm. Wurl	Harney Cr.	.5	1.5	1	.5	20		17	1901
2779	1	“ “	Harney Cr.	.5	1.5	.5	1	20		13	“
2780	4	T. P. Daniel et al.	Green River	2	8	6	1.5	4	600	560	“
2781	1	Ida M. Sellars	Spring Gulch	.5	2	2	1	5	60	35	1901
2782	1	“ “ “	Antelope Cr.	.133	1	1	1	5	40	10	“
2783	1	Richard Weaklen	North Elkhorn Cr.	.875	5	4	1	3	125	30	“
2784	1	“ “	“ “ “	.625	4	3	1	3	100	7	“
2785	1	Alma Grieve	Poison Spider Cr.	1.25	4	3	1	7	600	58	1902
2786	1	U. P. R. R. Co.	Spring Cr.	2.42					17,000		
2787	1	Whitehouse & Palmer	“ “	.666					100	280	1901
2788	1	“ “ “	“ “	1	4	3	1	10	150	160	“

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per M le			
					Top	Bot' m					
2789	1	Colin Beaton	Greasewood Draw	.75	6	4	1	5.28	$ 100	100	1901
2790	1	F. P. Meredith	Meredith Cr.	1.5	5	3	1	8	75	25	"
2791	4	Robt. L. Osborn	Goodwater Cr.	1.75	2	1.5	1	340	450	130	1902
2792	4	Placer Cyanide Co.	North Beaver Cr.	1.75	4.5	3.5	1	35	500	160	"
2793	3	D. E. Thompson	Big Popo Agie River						40,000		"
2794	1	L. L. Giessler	Willow Cr.	1.75	5	3	1	6.66	200	125	1901
2795	1	Jos. M. Trout	Wallace Cr.	1.25	4	3	1	7	150	58	1902
2796	1	" " "	" "	.75	4	3	1	7	150	23	"
2797	3	Alonso Ray	Kirby Cr.	2.5	7	5	1	6	500	295	1903
2798	4	C. A. Thurman	Willow Cr.	20	3	2	1	10	20	80	1901
2799	2	B. F. Champion	Mountain Springs	.166	2	1	.5	10	75	6	"
2800	4	R. S. Vickery et al	South Horse Cr.	4	6	3	1.5	8	150	415	1902
2801	4	Thos. W. White	South Middle Spring Cr.	.071	5	4	2	15	300		1903
2802	2	B. F. Parker	Six Mile Cr.	2	5	3	1	10.56	400	76.9	1902
2803	1	Kurtz-Chatterton Copper Mining Co.	Miner Cr.		4	3	1	25	3,000		1901
2804	1	N. A. Blaker	Tabor Springs	.125					300		"
2805	3	F. W. Morgan	Teton Cr.	2	16	14	4	6	1,500	2,000	1902
2806	3	C. R. Hoffman	Rattlesnake Cr.	1	4	3	1	5.28	100	100	1901
2807	4	Eugene Alexander	West Fork New Fork	.25	4	3	1	10.56	80	50	"
2808	1	J. W. Woodbury	Snake River	7.5	8	6	1.5	3	2,500	600	1902
2809	4	W. E. Enos	Green River	2.5	7	5	1	6.66	400	308	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
2810	3	Jos. Burns	Little Popo Agie	1					$ 30,000		1902
2811	4	Wm. F. Hill	Crow Cr.	.75	3	1.5	1	64	300	80	"
2812	4	" " "	Wagon Cr.	.375	4	3	1	8	200	136	"
2813	4	Zeph Jones	Big Canon Cr.	1	5	3	1	75	100	95	1901
2814	1	H. Allen Faulkner	Upper Mud Springs								"
2815	2	G. N. Doyle	Walker Cr.	.5	4.5	3	.75	5.28	50	27	"
2816	3	Paul S. Clark	Spring Cr.	1.75	3.5	2.5	1	30	175	115	1902
2817	3	C. E. Martin	Rattlesnake Cr.	1	3	2	2	12	100	160	1901
2818	3	Jas. Thomson	Spring Cr.	.25	2	1.5	.5	20	50	6	"
2819	3	" "	Short Cr	1.5	3	2	1	20	50	33	"
2820	1	W. A. Lester et al	Little Cottonwood Cr.	1	3	2	1	5	250	325	"
2821	3	Wm. H. Woods	Bennett Cr.	2.5	10	7	1	8	1,200	400	1902
2822	3	Wm. Lambe	Rawhide Cr.	.5	3	2	1	20	100	26	"
2823	3	J. M. Smith	Little Rocky Cr.	2.75	8	6	1	10	500	650	1901
2824	3	J. J. Kellum	Paint Cr.	1.75	6	4	1	8	200	114	"
2825	3	John Fry	Bennett Cr.	1.5	8	6	1	10	100	160	"
2826	3	Samuel Cortsen	Paint Cr.	2.75	3	2	1	10	150	100	"
2827	4	Archy Beaton et al	New Myers Cr.	1	6	3	1	10	150	67	1902
2828	3	W. J. Ashley	Green River	4.5	6	4	1.5	4	600	565	1903
2829	3	M. P. Palmer et al	Spring Cr.	1.5	7	4	1	10	200	61	1902
2830	3	Frank Moline	Deep Cr.	1.625	3	3	1	16	200	83	"
2831	3	F. W. Decker	Bennett Cr.	1.25	6	3	1.5	10	200	320	1901

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2832	3	J. R. Painter	Sunlight Cr.	6.8	5.5	4	1.5	9.5	$ 800	185	1901
2833	4	John Miller	Granite Cr.	1.25	4	3	1	30	100	160	"
2834	1	Rodney W. Darst	Dry Laramie River	1.5	5	3	1	10	150	105	"
2835	1	" " "	" " "	.75	4	3	1	12	100	35	"
2836	2	J. S. Young et al	Poison Cr.	3	6	4	1	5.28	600	193	1902
2837	2	J. A. Young	" "	.75	5	3	1	5.28	500	60	1901
2838	2	M. C. Young	Doyle Cr.	2.5	6	4	.5	10.56	1,500	397	1903
2839	4	Frank Crow	South Cottonwood Cr.	.5	4	3	1	8	250	137	1901
2840	2	A. W. Phillips	Sand Cr.	1.5	4	3	1	5	500	60	1903
2841	4	C. F. Roberson	Ham's Fork Cr.	6	10	8	1	4	1,500	700	1904
2842	1	Kirk Dyer	West Cameron Cr.	.75	3	2	1	6.66	200	15	1901
2843	1	" "	" " "	.375	3	2	1	1.16	125	16	"
2844	1	Mrs. Cora Dyer	West Cr.	.75	3	2	1	6.66	250	45	"
2845	1	" " "	West Cr.	.5	2.5	2	.833	6.66	125	25	"
2846	4	John Sims	Bear Cr.	.924	4	3	1.5	5	200	240	1902
2847	3	S. W. Aldrich	Hard Pan Cr.	1.5	5	3	1	10.56	250	200	1901
2848	2	Thos. W. Wroot	Coral Cr.	.5	3	2	.66	12	75	16	1902
2849	2	" " "	" "	.475	3	2	.66	12	75	11	"
2850	3	Morgan Thomas	North Rawhide Cr.	6	2	2	2	50	500	120	1901
2851	4	John Cherry	Black Rock Cr.	2.33	5	4	2		350	320	1902
2852	4	R. W. Taluradge	Grade Canyon	2.75	3	2	1	7	350	160	1903
2853	2	J. L. Condit	Beaver Cr.	2.85	8	6	1.5	6.66	1,200	220	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2854	2	Ike Jay	Allman Gulch	.437	1	1	.5	200	$ 100	25	1902
2855	1	L. L. Laughlin	Bar-M Cr.	1	4	3	1	10	200	105	“
2856	1	“ “	Newell Springs	.75	3	2	1	8	100	100	1901
2857	4	J. A. Williams	Spring Cr.	1	4	3	1	8	150	160	“
2858	1	L. L. Laughlin	Bar-M Cr.	1	4	3	1	6	200	94	“
2859	2	W. H. Minter	Iron Cr.	1	4	3	1	5.25	150	110	1902
2860	1	U. P. Water Co.	North Platte River	16							1905
2861	4	E. McNish	Duck Cr.	2	4	3	1	5.28	450	115	1903
2862	2	J. T. McDowell	North Fork Pass Cr.	.795	3	2	.75	6	100	50	1902
2863	2	Town of Sundance	Spring, Sec. 23, Tp. 51 N., R. 63 W.	.795					1,500		1901
2864	2	Chas. F. Smith	Deer Cr.	.25	3.5	2	.75	5.28	25	10	“
2865	2	“ “ “	“ “	.5	4.5	3	.75	5.28	35	23	“
2866	2	“ “ “	“ “	.5	4.5	3	.75	5.28	40	29	“
2867	4	J. W. Flemming	Granite Cr.	1	4	3	1	10	150	160	1902
2868	4	A. A. Curtis	Fish Cr.	1.75	7	6	1	8.5	300	200	1901
2869	1	Peter Matzen	Deer Cr.	1.25	4	3	1	5	200	37	“
2870	1	Julius Prahaska	Elkhorn Cr.	.5	4	2.5	.75	10	60	11.5	“
2871	1	“ “	“ “	.5	5	3	1	10	100	20	“
2872	3	Ora E. Snyder	Spring, Sec. 4, T. 40 N., R. 90 W.	1.3	2.5	2	1	20	100	8	“
2873	4	S. A. Nelson	Lost Cr.	1.25	3	2	1.5	15	80	160	1902

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2874	2	Wm. T. Dolan	LaPrele Cr.	.25	5	3	1	5.28	$ 100	40	1901
2875	3	Henry R. Moss	Meeteetse Cr.	.696	4	3	1	20	100	55	"
2876	1	Thos. Kelley	Springs, Sec. 7, Tp. 13, R. 60 W.	.25	2	1	1	10	100	20	"
2877	2	Jacob Mill	Big Lightning Cr.	2	5	4	1.5	5.28	500	101.5	1902
2878	1	W. D. Brydon	East Cottonwood Cr.	.75	4	3	1	5	150	43	1901
2879	1	Lettie M. Misters	Fields Cr.	8.5	4	3	1	5	150	43	"
2880	3	Mina Moss	Short Cr.	1	3	2.5	1	12	200	114	1902
2881	3	Vincent Vanoni	Ten Sleep Cr.	2.75	8	6	1	7	400	200	1905
2882	3	Chas. Stonegridge	Whit Cr.	1.25	3.5	2.5	.5	10.56	150	95	1902
2883	3	" "	Rand Cr.		3.5	2.5	.5	5.28	50	40	1901
2884	4	Hans Hemmert	Salt River	1.5	8	6	2	7	800	560	1900
2885	2	J. H. Kennedy	Deadwood Cr.	1.5	5	4	1	5	200	50	1903
2886	3	Horace Rate	Bad Water Cr.	2	7.5	4	2	6.5	600	181	1901
2887	3	J. P. Echard	Gulch, Sec. 16, T. 50, R. 102	3	8	6	1	10	200	202	"
2888	3	Farquhar Gillies	Grass Cr.	4.5	8	6	1	8.8	350	420	1903
2889	3	Robt. Echard	Swamp Cr.	1.75	4	3	1		100	61	1901
2890	3	J. P. Echard	Hoodoo Cr.	1.25	5	3	1	20	150	48	"
2891	4	Jacob Middaugh	Sage Cr.	3.25	5	3	1	20	50	80	"
2892	1	H. C. Bigelow	VanTassell Lake	20	12	9	2	60	22,999	25,000	1906
2893	1	Rollin A. Clark	Bates Cr.	2.5	10	8	1	6.5	150	275	1903

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2894	1	Michael O'Rourke	Muddy Cr.	.75	3	2	1	10	$ 200	60	1901
2895	1	Chas. Neitchen	Little Laramie River	2	6	4	1	5	700	283	1902
2896	4	Oscar Morganson	Bear Cr.	.75	4	2	1	8	100	80	"
2897	3	Susie A. Allen	Paint Cr.	2	8	6	1	4	500	130	"
2898	4	Mary Belknap	West Fork New Fork	.75	7	4	1	4	350	320	1903
2899	4	E. M. Belknap	" " " "	.75	5	3	1	4	150	150	1902
2900	4	J. W. Flemming	Phelps Lake	.25	5	4	1		500	320	1903
2901	4	Edward Flemming	Snake Cr.	1.5	5	4	1		500	320	"
2902	1	Eugene McCarthy	Casper Cr.	6	6	4	1	4	200	45	1902
2903	2	Carl Bayer	Beaver Cr.	.5	5	3	1	8	150	28	"
2904	2	" "	" "	.6	5	3	1	8	200	42	"
2905	1	Peter Nicolaysen	Cole Cr.	.5	3.5	2.25	1.5	5	140	28	1901
2906	1	M. W. Dillon	Battle Cr.	.288	5	3	1	52.8	250		1902
2907	2	John Winingar	Horse Cr.	.75	3	1.33	.66	10	80	32	1901
2908	4	Chas. F. Roberson	Fontenelle Cr	2	6	4	1.5	4	350	218.35	1903
2909	1	G. E. Millard	Badwater Cr.	1	3	2	1	10	200	40	1901
2910	1	" "	" "	1	3	2	1	11	200	30	"
2911	2	Richard Richter	Crazy Woman Cr.	2	4	2	1	10.5	1,000	165	1902
2912	2	Andrew Jackson	Little LaPrele Cr.	2.5	8	6	1.5	5	800	292	"
2913	1	W. A. Conley	Beaver Cr.	.714	4	3	1	5	200	31	"
2914	1	H. Ralph Hall	Lee Springs Cr.	1.5	3	2	1	5	200	31	"
2915	1	W. J. Garlock	George Cr.	.25	2	1	1	6	100	10	1901

Permits to Appropiate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2916	1	W. J. Garlock	Antelope Cr.	.625	3	2	1	7	$ 150	74	1902
2917	1	" "	Fallass Draw	.25	2	1	1	7	75	40	"
2918	1	" "	Davidson Cr.	.25	3	2	1	5	100	12	"
2919	1	" "	Prager Cr.	.75	4	3	1	5	200	66	"
2920	4	J. W. Schofield	Trail Cr.	.75	3	2	1	8	250	40	"
2921	3	Newton Land Co.	Sage Cr.	3.5	17	12	2.5	5	5,000	1,520	1903
2922	4	Burleigh Binning	Lake Cr.	.75	4	3	1	62	200	150	1902
2923	2	G. I. Hobbs	Rawhide Cr.	1.25	8	6	1.5	8	750	28	1903
2924	2	John Winangar	Horse Cr.	.75	2	16	.66	10	80	35	1901
2925	1	Kate McFarlane	Davidson Cr.	1	4	3	1	5	300	100	1902
2926	2	J. F. Murphy	Elkhorn Cr.	.875	6	4	1	7	150	70	1901
2927	1	W. F. Seabolt	Davidson Cr.	.5	3	2	1	10	75	11	"
2928	1	" "	" "	.375	3	2	1	6	80	14	1902
2929	4	Roy Anderson	Phillips Cr.	1.75	4	3	1	15	200	280	1903
2930	3	Herm Dyer	Grey Bull River	2.5	4	3	1	5.28	400	107	1902
2931	1	A. J. Rosander	Cottonwood Cr.	.25	3	3	6	5	100	20	1901
2932	4	Thomas Edwards	Trout Cr.	1.75	2	8	1	14	300	200	1902
2933	1	F. F. Johnson	Sage Cr.	1.5	4	3	1	7	350	149	"
2934	4	W. L. Price	Gros Ventre River	3	10	8	1.5	5.28	400	320	1903
2935	1	Leslie E. Snow	Spring Cr.	.5	1.5	1	.5	8	50	20	1901
2936	1	" " "	" "	.25	1.5	1	.5	8	50	9	"
2937	1	" " "	" "	.5	1.5	1	.5	8	50	27	"

PERMITS TO APPROPRIATE WATER—*Concluded.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2938	2	Albert Urban	La Prele Cr.	1.5	5	4	1	6	$ 300	71.8	1902
2939	2	Kenneth McDonald	Willow Cr.	1	5	3	1	8	200	62	1901
2940	2	Henry H. Bartshe	Box Elder Cr.	1.5	4.5	3.5	1.16	2	250	40	1902
2941	1	William H. Vaughn	Scott Spring								1901
2942	4	P. J. Delaney	Green River	2.5	8	5	1.5	.8	1,000	155	1902
2943	1	D. R. Whitaker	Little Bear								1903
2944	3	J. Donovan	Spring Cr.	.7	5	3	1	8	200	29	1902

The Permits described on the preceding pages are those issued between November 30th, 1898, and November 30th, 1900.

APPLICATIONS FOR ENLARGEMENT

From Nov. 30th, 1898, to Nov. 30th, 1900.

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
388	1	A. Rutherford	North Platte River	11.375	15	15	2.5	2	$ 4,000	1,568	1902
389	4	Chas. Wilkes	Salt River	5	20	18	3	10	70		1899
390	4	" "	Cottonwood Cr.	3.5	12	11	2	10		95	"
391	4	Mary I. Hughes	North Piney Cr.	2.5	6	5	1	52	100	320	1900
392	4	Chas. Peterson	Pine Cr.	.5	4	3	2.5	6.66	150	275	"
393	1	Jane Salmon	Sweetwater River	1	9	7	1	4	200		1901
394	1	A. and J. Salmon	" "	3.5	10	8	1	4	750	135	1900
395	3	C. A. Dodge	Grey Bull River	1.788	8	6	1	6	500	264	1899
396	3	C. F. Rathbone	Wilson River	3.25	8	6	2	10	500	337	1901
397	1	A. J. Bothwell	Sweetwater River	2.64	18	15	3	2.64	1,000	439	1900
398	3	Mary J. Corbett	Grey Bull River	11	12	9	1.5	6	600	109	1901
399	1	Mowry Bros. & Co.	South Spring Cr.	2.5	8	6	1.5	5.28	1,000	320	1902
400	3	P. T. Peralta	Big Popo Agie River	8	4	3	2	9		130	1899
401	2	Souther & Palmer	Piney Cr.	2.5	6	4	1	4.7	200	47	1900
402	4	K. K. Hill	Pine Cr.	1.5	8	6	1.5	8	400	330	1901
403	1	A. W. Phillips	LaBonte Cr.	6.5	14	8	2	2.5	2,000	855.5	"
404	3	A. L. Coleman	Canon Cr.	.75	5	4	1	8	700	85	1899
405	3	J. W. Strayer	Beaver Cr.	7.5	10	8	2	3.65			1900

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
406	2	E. R. Dinwiddie	Little Tongue River	1.75	5	3	1	10	$ 15	15	1900
407	1	Wm. McCrossin	Little Box Elder Cr.	.75	6	4	1		150	28	"
408	4	M. T. Wright	Smith's Fork Cr.	2.25	14	12	2	15	150	78	"
409	2	J. L. Baird	North Fork Beaver Cr.	3.5	3	2	1	8	100	60	1902
410	3	Cicero Avant	Grey Bull River	4.66	11	6	2.5	4		80	1901
411	3	L. L. Smith	" " "	3.5	7.5	6.5	1	7	200	50	"
412	2	J. L. Mitchell	Mitchell Cr.	.5	3	2	1	6.5	500	60	"
413	4	Martha E. Bess	LaBarge Cr.	.5	5	4	1	5.28	150	117	"
414	4	A. A. Steed	" "	1.75	13	11	1.5	6	150		1900
415	1	W. A. Blackmore	Muddy Cr.	4.25	4	3.8	.66	.8	20	34	1901
416	3	Wm. A. Stevenson	Grey Bull River	3	15	9	2	7	600	109	"
417	2	E. R. Dinwiddie	Little Tongue River	6	6	3	1.5	.5	300	150	1900
418	3	G. B. Pardee	Owl Cr.	2.5	10	8	1	6.5	300	232	"
419	4	Robert Park	Cottonwood Cr.	4	8	6	1.5	11.5	350	195	1901
420	4	Wm. G. Park	" "	2	5	4	2	20	200	60	1900
421	3	H. M. Simpson	Clark's Fork	3	8	6	1.5	5	2,000	992	"
422	3	Farmers' Prot. Association	Shoshone River	10	26	20	3	2	4,000	2,500	1903
423	4	Andrew Peterson	Brodshaw Cr.	1	2	1.5	1	10	50	160	1900
424	4	M. J. Wright	West Fork of New Fork	1.5	9	7	2	6	350	335	1901
425	4	Nettie B. Hoff	" " " "	3.25	9	7	1.5	15	300	596	"
426	4	J. W. Carpenter	Nowood Cr.	4	10	8	1	5	150	37	"
427	3	Donald McPhail	Jack Cr.	.5	5.5	4.5	1.25	7		320	1900

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
428	4	G. W. Nibarger	Smith's Fork Cr.	2.2	8	7	1	40	$ 25	160	1901
429	1	E. A. Thayer	Hunton Cr.	.5	6	4	2	6	200	164	"
430	4	Elizabeth Lowder	Swift Cr.	.75	3	2.5	1.5	15	100	80	1899
431	1	Clara W. Larson	Medicine Bow River	3	6	4	2	4	100	120	1900
432	1	Rollin A. Clark	Bates Cr.	2.25	12	9	1.5	6.5	500	170	"
433	1	Mary Gorden	Horse Shoe Cr.	1	6	4	1	5	300	85	"
434	4	Elbert Allen	Cottonwood Cr.	4.5	6	4	2	27	500	289	1901
435	3	George Glaze	Grey Bull River	3.75	7	5	1	8	250	105	1900
436	2	John Baugh	Arch Cr.	1.5	6	4	1	5.5	120	220	1901
437	4	T. B. Schabe	North Piney Cr.	2	8	6	1.5	25	250	115	1900
438	4	F. Kingston	Cottonwood Cr.	1.5	8	6	2	10	150	175	1901
439	4	Carl Anderson	Willow Cr.	.375	2	1.5	1	10	50	40	1899
440	1	W. A. Clark	Snake River	10	16	12	3	4	1,000	1,701	1903
441	1	Josephine Higgins	North Platte River	4.5	8	6	1	5	1,500	1,057	1901
442	4	C. A. Johnson	Salt River	3.5	3	2	1.5	10	150	190	1899
443	1	Peter Paulson	Horse Shoe Cr.	.435	3	1	1	10.6	50	35	1900
444	4	Michael Lowham	Mill Cr.	1	3	3	2	8.28	10	65	"
445	2	Colorado Colony Ditch Co.	Cross Cr.	16	17	10	3.5	5.28			"
446	1	John Moran	Elkhorn Cr.	1.022	4	3	1	10	200	90	"
447	1	O. R. Henke	Sybille Cr.	.75	2.5	2	1	7	40	20	"
448	2	John Storrie	Hat Cr.	2	6	3	1	5.28	100	120	"
449	2	" "	" "	1.5	6	3	1	5.28	100	40	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
450	4	James Jensen	Jensen Cr.	.5	3	2	1	10	$ 50	15	1900
451	4	R. L. McGavin	Burch Cr.	3	4	3	1.5	10	15	160	"
452	4	John Reves	Crow Cr.	4.75	3	3	1	20	50	80	"
453	4	Hans J. Olson	East Fork New Fork	2.75	5	4	1	240	300	232	1901
454	4	F. P. Cranney	Cottonwood Cr.	2.5	5	4	2.5	65	200	910	1899
455	1	John Kern	La Bonte Cr.	1.25	6	4	1.5	2.5	125	15	1900
456	4	John and J. A. Fluckiger	Willow Cr.	2.5	12	10	2.5	18	50	85	"
457	1	Geo. Mitchell	North Laramie River	.227	5	3	1	10.6	50	20	"
458	1	I. C. Platt and J. A. King	Billy Cr.	2.5	6	4	1.5	5.28	2,000	1,160	1901
459	4	B. G. Griggs	Middle Piney Cr.	1.75	7	6	1.5	50		132	"
460	2	Chas. H. King	Poker Cr.	2.093	4	3	1	8.33	500	33	"
461	3	A. Cavendar	Grey Bull River	2.5	10	8	1	5.28	200	128	1900
462	3	Milton D. Howard	Shell Cr.	9	14	10	1.5	4	2,000	430	1902
463	3	Henry Becker and Jacob Becker	Deep Cr.	6.45	8	5	1.5	10	800	948	"
464	4	T. J. Anderson	LaBarge Cr.	.75					100	560	1900
465	2	W. T. Roberts	Clear Cr.	.5	5	3.5	1	4	400	40	1901
466	2	G. A. Roberts	" "	.25	5	3.5	1	4	50	40	1900
467	1	F. E. Sterrett	North Fork Brush Cr.	5	12	8	2	3.16	400	200	"
468	3	J. W. Daniels	Grey Bull River	2.25	11	8	1	4.5	300	105	"
469	2	I. B. Roberts	Clear Cr.	1.25	5	3.5	1	4	600	120	1901
470	1	Minnie Rietz	Big Laramie River	1.25	6	5	1	6	200	105	1900
471	2	Wm. S. Hill	Md. Fork Powder River	4	8	6	1	6	500	80	1901

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
472	4	Susan Renshaw	North Piney Cr.	2.5	6	5	2	25	$ 150	90	1901
473	4	Christopher Early	Black's Fork Cr.	1.75					75	55	1900
474	4	Mary P. Kingston	Swift Cr.	4.5	13	11	1.5	20	150	40	1901
475	4	Ella Reardon	South Piney Cr.	2	10	8	1.5	5.28	500	640	1902
476	4	Jennie S. Holden	" " "	1.375	6	4	1	5.28	200	200	1901
477	3	Samuel Osborne	Wood River	.75	3	2	2	10	500	60	1900
478	3	T. E. Brackney	" "	1.5	3	2	2	10	500	50	"
479	3	Elizabeth Waln	Medicine Lodge Cr.	3.006	5	4	1.5	6	250	360	"
480	3	Charles Mills	No Wood River	1.25	5	4	1	6	150	46	"
481	1	Josephine Fletcher	Sweetwater River	3	8	6	1.5	4	300	120	1901
482	3	Otto Franc	Grey Bull River	6	20	12	2			320	1899
483	1	Chas. G. Johnson	Red Cloud Slough	1.5	3	2.5	.66	6	100	175	1900
484	1	" " "	" " "	1.5	3	2.5	.66	6	100	150	"
485	3	J. E. Benion	Wood River	1.5	7	5	1.5	8		135	"
486	1	John Reid	Little Laramie	2.5	4	4	2	5	500	297	"
487	4	Daniel Nash	Black's Fork	1.79	6	5	1	6	200	192	1901
488	3	F. R. Lundie	Grey Bull River	1.5	10	8	1	6.5	100	30	1900
489	1	W. H. Davis	Deer Cr.	.5	5.5	3.5	1.5	8	150	133	"
490	1	" "	" "	.25	5.5	3.5	1.5	8	40	14	"
491	1	Albert Deselm	Little Medicine Cr.	1.25	4	3	1	7	175	110	1901
492	4	Grace A. Snider	Horse Cr.	1.25	10	8	1.5		200	280	"
493	3	J. W. Deane	Wood River	.25	2	1.5	1.5	10	100	20	1900

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
494	3	J. A. Williamson	Grey Bull River	2	6	6	5	6.66	$ 340	340	1901
495	2	Hiram Sturdivant	Piney Cr.	.75	5	3.5	1.5	12	200	80	1900
496	4	S. M. Vickrey	South Piney Cr.	20	12.5	9	1.5	4	100	36	1901
497	3	Flora Standish	Grey Bull River	3	3	2	1	6	150	35	1900
498	4	G. W. Webster	Middle Piney Cr.	1.5	6	4	1		150	160	"
499	3	Wm. M. Harvard	No Wood Cr.	1.75	3	2	1	8	200	27	"
500	1	J. A. Kennedy	Bates Cr.	1.25	10	8	1.5	5	1,200	160	1901
501	1	W. S. Waln	Horse Shoe Cr.	1.5	6			5	200	20	1900
502	3	J. W. Morrow	Grey Bull River	8	10	8	1.5	8.8	100	151	"
503	1	John Reid	Little Laramie	2	4	3.5	1.5	6	75	140	"
504	1	" "	" "	3.5	7	5	2	5	200	153	1901
505	4	J. T. Tryon	Smith's Fork Cr.	1.8	2	10	2	8	150	50	"
506	3	E. A. Signor	Beaver Cr.	1.5	5	3	1	9	250	100	1900
507	3	C. J. Mecham	Owl Cr.	2		5	1	6	200	200	"
508	1	Henry Mudd	Sybille Cr.	.75	2	1	1	8	60	41.6	1901
509	4	Ed Rose	Black's Fork River	.333	8	7	1	8	50	120	1900
510	3	B. B. Morton	Ten Sleep Cr.	3	9	7	1	3.2	200	210	1901
511	1	Chas. E. Lovell	North Platte River	1	4	3	1	6.63	200	50	"
512	4	Levi E. Merritt	Strawberry Cr.	.75	8	7	1.5	8	100	80	1900
513	2	J. V. Duke	Powder River	.75	8	6	1	5.28	200	47	"
514	3	Thos. S. Mills	Cherry Cr.	2	8	6	1	8		22	1901
515	3	Milton Benedict	Shoshone River	2.5	4	3	1	8	200	30	1902

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
516	4	W. T. Cranney	Cottonwood Cr.	1.75	9	7	2.5	20	$ 50	39	1901
517	3	F. V. Andrews	Sand Cr.	.104	3.83	3.83	2.41	6.66	100		"
518	4	John Erekson	Smith's Fork Cr.	2.98	12	10	2	8	150	83	"
519	3	Noble & Braggs Sheep Co.	No Wood River	2.5	3	2	1	8	300	78	"
520	2	Chas. B. Devoe	Beaver Cr.	3.25	8	6	1.5	12	300	206	1902
521	3	Nellie Sliney	Owl Cr.	5.5	7	5	2	8	200	160	1901
522	2	A. M. Oglesby	Powder River	2.2	3	2	1	3.33	200	20	"
523	4	Silver & Bensen	Bear River	2	10	7	2	5.28	300	520	"
524	1	W. A. Benecke	Bates Cr.	4.5	10	7	1.5	16	300	930	"
525	1	W. C. Harnden	Wagon Hound Cr.	.25	7	5	2	8	100	139	"
526	4	K. J. Jomen	East Fork New Fork	2.75	8	5	1.5	10	800	405	1902
527	3	Frank Gapen	Medicine Lodge Cr.	.796	3	2.5	1	27	50	70	1901
528	1	L. E. Burnett	Little Medicine	.968	4	3	1	6	50	110	1900
529	1	" "	" "	.812	3	2.5	.87	8	25	48	"
530	3	W. R. Williams	Brokenback Cr.	1.25	5	4	1.5	5	150	85	1901
531	1	Geo. I. Lambe	LaPrele Cr.	3	6	6	1	5	480	150	1900
532	1	D. D. Wagoner	Cedar Cr.	.5	4.5	4	1	10	50	70	"
533	3	D. F. Hudson	Little Popo Agie	3.5	7	4	1.5	4	600	230	1901
534	1	J. H. Fischer	Laramie River	7	12	8	2	5.28		770	1900
535	3	Henry A. Thurston	Grey Bull River	5	8	5	1	8	500	141	1901
536	1	F. M. Clauser	Little Laramie	1.5	5.5	4.5	1	3	300	108	"
537	3	H. A. Thurston	Grey Bull River	2.25	10	5	3	7	200	29	"

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
538	3	Grant Yarnell	Grey Bull River	4	7	6	1	5.28	$ 300	105	1901
539	4	Lizzie E. Allen	East Fork New Fork	4.5	6	4	2	27	800	415	1902
540	3	Peter Fleming	Wood River	2	8	6	2	81	150	50	1901
541	3	Jos. Brown	Grey Bull River	2	9	9	2	8	300	160	1900
542	2	Martha J. Brown	North Fork Powder River	2.5	7	5		5	700	160	1901
543	1	W. A. Denecke	Bates Cr.	3	10	7	1.5	16	300	345	"
544	1	Tom Garrett	North Laramie River	1	6	5	1	3	300	52	"
545	3	F. E. Wood	Grey Bull River	4.5	8	8	2	6	250	1,766	1900
546	3	S. H. Cockins	" " "	3.75	10	8	1	5.6	200	886	1901
547	4	Nellie Ball	Cottonwood Cr.	.5	6	5	1	16	75	90	"
548	4	" "	" "	3.5	8	6	1	10	72		1902
549	3	Bertie Yates	Grey Bull River	1	4	3	1	8	50	20.33	1901
550	4	D. A. Rowe	Cedar Cr.	3.5	7	6	1.5	13	100	320	1900
551	4	Oscar Johnston	Green River	3	12	10	1	4	1,000	308	1902
552	3	A. P. Battrum	Little Popo Agie		5	4	2	9.5	250	110	1900
553	3	Frank A. Grace	Grey Bull River	2.5	12	10	1	6	400	92	"
554	1	R. W. Darst	Dry Laramie River	1.25	6	4	1	10	60	80	"
555	1	F. M. Parker et al	Big Laramie River	13	6	6	1	5	150	160	"
556	3	Clara Trepus et al	Grey Bull River	3.25	7	6	1	8	500	280	"
557	1	C. P. Arnold et al	Little Laramie River	3.5		12	1.5	4	400	340	1901
558	2	J. O. and J. R. Morgareidge	North Fork Powder River	2.812	8	7	1.5	5	1,000	408	1899
559	4	Wm. J. Gheen	Little Twin Cr.	1.75	6	5	1	8	450	250	1900

APPLICATIONS FR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Datefor Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
560	3	Aara J. Knisely et al	Stinking Water River	.75	20	15	1	6	$ 1,500	787	1900
561	1	Mary Houghton	Antelope Cr.	3	7	5	1	5	400	210	1901
562	2	Uree D. Horr	Deadwood Cr.	.5	4	3	1	8	75	6	1900
563	1	M. O'Rourke	Muddy Cr.	1	3	2.5	1		125	74	1901
564	3	F. G. Slack et al	Grey Bull River	3.75	8	6	2	7	400	366	1900
565	4	Fred Lovejoy	Gros Ventre River	1.25	4	3	1	5.28	200	160	"
566	4	Alma J. Vail	Baxter Cr.	1	4	3.5	.66	10	40	40	"
567	2	Thos. Coppinger	Beaver Cr.	1.168	6	3.5	1	6	100	30	"
568	2	E. B. Williams	Piney Cr.	10	4.5	3.5	1.5	5.3	1,000	430	1902
569	3	Emanuel Faust	Grey Bull River	4	15	7	4	5	100	630	1900
570	3	J. A. Winslow	" " "	10	8	1	5	6	100	120	1901
571	3	A. W. Winslow	" " "	4	10	8	1	5	100	39	"
572	3	B. F. Mercer	Medicine Lodge Cr.	6.5	13	11	1.5	4.5	1,800	439	1902
573	3	J. W. Dilno	Grey Bull River	5.5	15	9	1	5	200	115	1901
574	4	Edward Overy	Smith's Fork Cr.	1.25	4	3	1	3	30	90	"
575	1	G. A. Burg	Big Laramie River	3.5	12	8	2	2	1,000	2,132	1902
576	3	I. Dickinson et al	Grey Bull River	1.75	9	8	1	23.4	200	151	"
577	4	Geo. W. Walton	Stump Cr.	5	10	8	1.5	20	300	245	1901
578	4	A. T. McLaughlin	Smith's Fork	3		6	1.5	5	150	160	"
579	4	Pauline Noble	West Fork of New Fork	1	4	3	1.5	6	500	110	"
580	4	Ella Holden	Fontenelle Cr	1	12	10	2		300	258	1902
581	4	J. M. Wells et al	Crow Cr.	2	11	9	1	14	100	280	1901

APPLICATIONS FOR ENLARGEMENT—*Concluded.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
582	4	J. Budd et al	North Piney Cr.	8	7	5	1	48	$ 600	970	1900
583	4	H. W. Burdick	LaBarge Cr.	7.5	10	8	1.5		500	175	1901
584	4	Rasmus Nickelson	" "	3.5	5	4		3	50	160	"
585	1	Alice R. Peryam	Grand Encampment River	.176	3	2	1.25	10	25	100	1900
586	4	George Hartley	Horse Cr.	5	12	10	2.5	20	400		1901
587	1	Jos. Heward	Muddy Cr.	2	8	7	2.5		160	300	1900
588	3	Morgan Thomas	Rawhide Cr.	1.127	6	7	1.5	50	128	300	1901
589	4	Harvey H. Hittle	East Fork New Fork	1.25	4	3	1	5	160	500	1902
590	4	Elizabeth McNish	Duck Cr.	1.5	6	5	1	5.6	180	100	"
591	2	John A. Jones	Spring, Sec. 11, T. 50, R. 82	.75	6	4	1	5.28	108	500	1901
592	2	Lydia Clelland	LaPrele Cr.	2	5	3	1	5.28	129	250	1902
593	2	J. H. Kennedy	" "	2.375	6	4	1.25	4.5	89	300	1904
594	4	D. C. Swartfoger	Black's Fork River	1	8	6.5	1.5	8	320	150	1901
595	3	Laura Bragg et al	Deep Cr.	14	11	8	1.5	10	445	2,000	1903
596	1	Ed. S. White	Red Cr.	2	6	4	1	16	190	300	1902
597	3	John Lewis	Ten Sleep Cr.	5.5	10	8	1.5	3	170	1,000	1903
598	3	Jacob Greenwold	South side Grey Bull	2.5	10	6	2	5	1,000		1901
599	4	John Stacey	Bear River	1					320	150	1902
600	1	Kate McFarlane	Davidson Cr.	1	4	3	1	5	85	300	1901
601	3	A. L. Coleman	Deep Cr.	7	6	4	1.5	10	130	113	1900
602	1	A. J. Goetz	North Fork Sage Cr.	2.5	5	3	1	5.5	300	81	1902
603	2	Lenard Burger	Md. Fork Powder River	2	6	4	1	5.28	500	96	1901

TABLE

GIVING CERTIFICATES OF APPROPRIATION ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOVEMBER 30, 1898, AND NOVEMBER 30, 1900.

WATER DIVISION NO. 1.

Spring Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Kuykendall No. 3	W. L. Kuykendall.......	486	Summer '82	Irrigation	1.43	100
2	Short Line Ditch	J. H. and C. Crawford...	"	March 1888	"	0.21	15
3	Crawford Ditch..........	Carrie Crawford.........	"	Sept. 18 '89	"	1.45	100
	North Spring Creek, Tributary of Spring Creek.						
1	Kuykendall No. 1.......	W. L. Kuykendall......	486	May 1882	Irrigation	1.43	100

North Spring Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
2	Methodist Creek Ditch	Alex. McPhail	486	Summer '84	Irrigation	0.85	60
3	Harnes	M. and H. W. Haines	"	July 26 '84	"	22.80	1,600
4	Douglass	John M. Douglass	"	May 1 1885	"	1.71	120
5	Swazey's North Spring	Edward L. Swazey	"	May 24 1885	"	5.00	350
6	Methodist Creek	Alex. McPhail	"	1886	"	10.57	740
7	Cherokee	S. C. Rhodes et al.	"	July 1886	"	1.28	90
8	Crooked	Jos. E. Page et al.	"	March 1887	"	3.43	240
9	White	White & Atfield	"	May 1 1890	"	0.71	50
10	Cherokee	S. L. Rhodes	"	June 18 '91	"	2.28	160
10	"	James Deegan	"	"	"	1.71	120
10	"	Alex. McPhail	"	"	"	2.28	160
9	Western Ditch	M. and H. Haines	487	April 1884	"	2.57	180
10	Central Ditch	M. and H. Haines	"	May 1 1884	"	0.57	40
11	North Side Ditch	Hattie S. Swazey	"	May 3 1884	"	3.43	240
12	Lats from Wagoner 3	David Foutz	"	Summer' 84	"	0.17	12
13	S. Spring Cr. Irr. Ditch	Frank Williams et al	"	Jan. 1885	Stock, Dom'stic, irr.	17.00	1,120
13	S. Spring Cr. Irr. Ditch	Chas. S. Miner	"	" "	Irrigation	1.14	80
14	Wagoner No. 1	Mary E. Hoyt et al	"	Early in '85	"	1.90	135
15	Eastern Ditch	H. W. and M. Haines	"	April 1885	"	2.28	160
16	Foutz Ditch	David Foutz	"	May 1886	"	0.57	40
17	Miner No. 5	Chas. S. Miner	"	Sept. 1 1886	"	0.36	25
18	Wagoner No. 2	Mary E. Hoyt et al	"	1888	"	2.28	160

North Spring Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
19	Brubaker No. 2	Robt. E. Cowan	487	May 21 '88	Irrigation	2.28	160
20	Monroe Ditch	White & Monroe	"	April 15 '89	"	0.85	60
21	Foutz Nos. 1 and 2	David Foutz	"	"	"	0.71	50
22	Cannon Ditch	Garber & Bashol	"	May 20 '90	"	1.00	70
23	S. Spg. Cr. Irr. Co. Ditch.	S. Spring Irr. Co.	488	1890	"	13.71	960
23	Wagoner No. 3	Mary E. Hoyt et al	"	"	"	0.07	5
23	Wagoner No. 3	Samuel Monroe	"	"	"	0.43	30
10	Cherokee	E. J. Foutz	486	June 18 '91	"	2.28	160
10	"	Alex. McPhail	"	"	"	5 71	400
10	"	James Deegan	"	"	"	3.36	235
10	"	S. L. Rhodes	"	"	"	2.07	145

EAST BRANCH OF SOUTH SPRING CREEK.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Ewett Ditch	James W. Heather	488	Feb. 12 '85	Stock, domestic, irr.	2.14	80
2	Ewett Ditch. 2nd App'n.	James W. Heather	"	1888	Irrigation	9.71	680

BATES CREEK, Tributary of North Platte River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
26	Place & Crouse	Fred E. Place	511	May 30 '96	Irrigation	7.92	555
26	Place & Crouse	Jake Crouse	"	"	"	4.64	325

SOUTH SPRING CREEK, Tributary of Spring Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Wagoner No. 2	John Wagoner et al	487	July 1 '79	Irrigation	0.14	10
2	Wagoner No. 1	" " "	"	July 20 '79	"	0.14	10
3	Monroe No. 1	Samuel Monroe	"	July 1880	"	1.14	80
4	Miner No. 1	Chas. S. Miner	"	April 15 '81	"	0.57	40
5	Miner No. 2	" " "	"	April 20 '81	Irrigation, domestic	1.25	80
6	Kuykendall No. 2	W. L. Kuykendall	"	Summer '82	Irrigation	2.85	200
7	Wagoner No. 3	Mary E. Hoyt et al	"	July 1 1882	"	1.71	120
8	Swazey's Ditch	Edward L. Swazey	"	Aug. 1 '82	"	1.43	100

METHODIST CREEK, Tributary of North Spring Creek.

1	Deegan No. 1 Ditch	James Deegan	487	June 15 '94	Irrigation	0.85	60
1	Deegan No. 2 Ditch	James Deegan	"	"	"	1.42	100

CENTENNIAL CREEK, Tributary of South Spring Creek.

1	Centennial Ditch	Edgar F. Grout	487	Spring '79	Irrigation	1.71	120
2	Miner's Nos. 3 and 4	Miner & Foutz	"	May 1882	"	0.28	20
3	Miner's Nos. 3 and 4	Miner & Foutz	"	Summer '88	"	0.21	15
4	Centennial Ditch	Edgar F. Grout	"	Nov 25 '92	"	4.28	300

DEER CREEK, Tributary of Pass Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
8	Mattson Ditch..........	August Mattson.........	501	Nov. 4 '97	Irrigation	2.28	160

ROCK CREEK, Tributary of North Platte River.

38	Canon Ditch	Margaret Dixon	535	April 1897	Irrigation	3.71	260

TABLE

GIVING CERTIFICATES OF APPROPRIATION ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOVEMBER 30, 1898, AND NOVEMBER 30, 1900.

WATER DIVISION NO. 2.

Lytle Creek, Tributary of Belle Fourche River—Crook County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
2	Ryan-Baird C. Co.	John C. Ryan	507	June 10 '96	Irrigation	3.00	210
		Redwater Creek—Crook County.					
3	Jan Moller Ditch	Fred Burnett	515	Jan. 21 '98	Irrigation	.57	40

SOUTH REDWATER CREEK, Tributary of Redwater Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
13	Powell & Davis Ditch...	Chas. A. Scott..........	507	April 19 '93	Irrigation	2.14	150
		A SPRING, Tributary to Redwater Creek.					
16	Stark Ditch............	J. E. Haines...........	507	April 2 '96	Irrigation	0.04	3
		A SPRING, Tributary to South Redwater Creek.					
1	Rhodie Ditch	A. M. Hemler	515	Dec. 9 '95	Irrigation	0.14	10
		SAND CREEK, Tributary of Redwater Creek.					
7	Benton & Avery........	Benton & Avery	215	June 2 '95	Irrigation	1.14	80
		SAND CREEK, Tributary of Belle Fourche River.					
8	Rimicke Ditch	Jane Huxley	542	June 12 '95	Irrigation	0.03	2

SPRINGS, Tributary to Bear Run—Weston County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Bear Run Ditch.........	Coates & Fawcett.......	542	Oct. 10 '95	Domestic, irrigation	0.92	65

SOUTH FORK OF BEAR RUN.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	South Fork Ditch	W. E. Keyes	542	Oct. 22 '97	Domestic, irrigation	0.34	24

LITTLE OIL CREEK, Tributary of Oil Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
	M. J. Coyle Ditch.......	M. J. Coyle	542	May 31 1897	Irrigation	1.50	110

SPRINGS OF OIL CREEK.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Oil Creek Ditch.........	Zedick W. Freel........	542	June 4 '97	Domestic, irrigation	1.47	103

SEEPAGE WATER, Tributary to Rock Creek—Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
31	Arroyo Ditch..........	Mary P. W. Bacon......	515	Dec. 31 '98	Irrigation	0.28	20

CROSS CREEK, Tributary of Big Goose Creek—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
67	Mountain Supply	Colorado Colony........	495	June 15 '99	Supplemental Irrigation		6,320
	RAPID CREEK, Tributary of Big Goose Creek.						
2	Addleman No. 1........	Maggie E. Addleman....	507	Mch. 12 '97	Irrigation	1.07	75
	WHITE CREEK, Tributary of Little Goose Creek.						
51	White Water Ditch.....	John S. Benton.........	499	May 6 '95	Irrigation	0.85	60
	JACKSON CREEK, Tributary of Little Goose Creek.						
56	Robinson Ditch.........	L. E. Martin...........	499	Jan. 25 '98	Irrigation	0.01	1
	LITTLE GOOSE CREEK, Tributary of Big Goose Creek.						
57	Colorado Ditch	R. Cornwall...........	515	July 1 '98	Irrigation	0.50	35

BEAVER CREEK, Tributary of Big Goose Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
57	Scaramellini Ditch	Wm. Scaramellini	515	July 1 '98	Irrigation	3.14	220

BIG GOOSE CREEK, Tributary of Tongue River—Sheridan County.

59	Peralto Ditch...........	Eliza Hurlbut	541	Mar. 8 '97	Irrigation	0.78	55
65	Beck No. 9	W. Thompson..........	"	Aug. 16 '98	"	0.47	33

SEEPAGE, Jackson Creek, Tributary of Little Goose Creek.

58	Benton & Crogan.......	Benton & Crogan.......	541	Jan. 7 '99	Irrigation	1.07	75

HANNA CREEK, Tributary of Little Goose Creek.

53	Hay No. 2	R. M. Hays	541	Mar. 8 '97	Irrigation	0.21	15

SPRING, Tributary of Little Goose Creek.

53	Hay No. 1.............	R. M. Hays	541	Mar. 8 '97	Irrigation	0.30	21

WOLF CREEK.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
22	Stewart Ditch	Chas. S. Decker	541	Mar. 28 '97	Irrigation	1.50	110
		Tributary of Wolf Creek.					
23	Cutter Ditch............	Geo. H. Cutter	541	June 26 '97	Stock, domestic, irr.	0.45	32
		FIVE MILE CREEK, Tributary of Tongue River.					
4	Westlake Ditch	Geo. W. Westlake	541	Mar. 18 '99	Irrigation	0.64	45
		BRANCH OF FIVE MILE CREEK, Tributary of Tongue River.					
2	Owen Ditch	Owen Bros..............	541	Mar. 25 '96	Irrigation	4.80	336
		SOUTH PINEY CREEK. Tributary of Clear Creek.					
36	Brooks' Lateral.........	E. J. Brooks............	541	Jan. 8 '97	Irrigation	0.28	20
58	West Side Enlargement..	W. H. Babione	"	Dec. 27 '97	"	0.78	55

BIG (OR SOUTH) PINEY CREEK—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
52	W. J. D. Enlargement. .	Samuel Dickey..........	499	Jan. 7 '96	Irrigation	0.71	50
MURPHY GULCH, Tributary of Prairie Dog Creek.							
8	Stroud & Stout	T. A. Stout.............	541	June 19 '97	Irrigation	0.50	35
8	Stroud & Stout	C. B. Stroud............	"	"	"	0.50	35
WAGNER CREEK, Prong of Dutch Creek, Tributary of Prairie Dog.							
1	Sickler Ditch	H. E. Sickler...........	541	June 10 '96	Stock, irrigation	0.64	45
DUTCH GULCH, Tributary of Prairie Dog Creek.							
2	Arno Ditch.............	Wm. Symonds..........	541	Nov 4 '97	Stock, irrigation	1.92	135
JENNINGS GULCH, Tributary of Mead Creek, Tributary of Prairie Dog.							
3	Bard Ditch.............	Minerva E. Bard........	541	Jan. 9 1900	Irrigation	1.07	75

SOUTH FORK OF CRAZY WOMAN CREEK—Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
	Bank Ditch............	Fred Waegele	541	July 6 '96	Domestic, irrigation	0.19	13.4

STEELE CREEK, Tributary of South Fork of Crazy Woman Creek.

1	Pen Ditch.............	Fred Waegele	541	July 6 '96	Domestic, irrigation	1.45	102

HAY CREEK—Crook County.

6	Swan Ditch............	John Pearson..........	533	June 10 '97	Irrigation	1.00	74

HILMAN CREEK, Tributary of Belle Fourche River.

1	S. Hilman Ditch	Lydia Hilman	541	Aug. 20 '96	Irrigation	0.88	62

TABLE

GIVING CERTIFICATES OF APPROPRIATION ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOVEMBER 30, 1898, AND NOVEMBER 30, 1900.

WATER DIVISION NO. 3.

BROKENBACK CREEK, Tributary of No Wood River, Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
9	Williams, Extension	W. R. and H. Williams .	513	Aug. 30 '97	Irrigation	1.07	75

TEN SLEEP CREEK, Tributary of No Wood River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
12	Standard Ditch	Margaret McCreery	513	Oct. 19 '95	Irrigation	0.95	67
13	Victoria Ditch...........	David Moses	"	Nov. 22 '95	"	0.65	45
13	Victoria Ditch...........	Samuel A. McLaughlin ..	"	"	"	0.71	50

OWL CREEK, Tributary of Big Horn River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
1	Kirby Ditch	Owl Creek L. S. Co.	528	Spring '80	Stock, domestic, irr.	2.37	165
2	Owl Ditch	Embar Cattle Co.	"	1880	" " "	5.48	382.7
3	Garden Ditch	John L. McCoy	"	1882	Irrigation	0.57	40
4	Sliney & Mikkelson	H. P. Rothwell L. S. Co.	"	Oct. 1884	"	2.20	154.6
4	Sliney & Mikkelson	Geo. M. Sliney	"	" "	"	3.19	222.6
5	Cagney Ditch	F. L. Jones	529	Fall 1885	"	2.55	178.7
6	McCoy Ditch	John L. McCoy	"	Nov. 14 '85	"	1.64	114.8
7	Short & Heiden	Christian Heiden	"	Spring 1886	"	0.35	25
7	L. Short & Heiden	L. and B. Short	"	" "	"	0.28	20
8	McCulloch Ditch	Embar Cattle Co.	"	Spring 1887	"	0.85	59.1
9	Padlock Ditch	Geo. M. Sliney	"	June 1887	"	3.60	252
9	Padlock Ditch	Rothwell L. S. Co.	"	" "	"	7.86	550.7
10	Price & Landis Ditch	Embar Cattle Co.	"	April 1888	"	7.29	509.2
11	Cusack Ditch	Edmund Cusack	"	June 1888	"	2.70	189
12	Simmerman Ditch	L. J. Simmerman	"	Oct. 1888	"	2.56	179.2
13	McManus Ditch	A. McManus	"	Spring 1889	"	0.28	20
14	Shaffer & Nielson	J. P. Nielson	"	1889	"	0.71	50
15	Pardee Ditch	Anchor Cattle Co.	"	May 1890	Stock, domestic, irr.	1.13	78.6
16	Dempsey Canal	Edmund Cusack	"	Dec. 18 '94	Irrigation	1.64	115
17	Close & Bader	F. L. Jones	"	Feb. 21 '96	"	3.26	228.7
18	Winchester Ditch	R. A. Winchester	"	June 8 '96	"	0.78	55
19	Dempsey Canal	Thos. Hume	530	Oct. 10 '97	"	2.50	175.9

Owl Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
20	Pardee Ditch	Anchor Cattle Co.	530	May 11 1899	Stock, domestic, irr.	1.19	83
	NORTH FORK OF OWL CREEK.						
1	Smith Ditch	Leonard Short	530	Spring 1882	Irrigation	0.87	61
2	Basin Ditch	Embar Cattle Co.	"	May 1886	Stock, domestic, irr.	9.37	655
3	Short No. 3	Leonard Short	"	Nov. 1 1896	Irrigation	0.50	35

TABLE

GIVING CERTIFICATES OF APPROPRIATION ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOVEMBER 30, 1898, AND NOVEMBER 30, 1900.

WATER DIVISION NO. 4.

SALT RIVER—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
28	Fairview Canal..........	John C. Dewey.........	482	July 10 '95	Irrigation	0.64	45
28	" "	Ole Swanson...........	"	"	"	0.78	55
21	North Canal Branch	Chas. Kingston.........	"	June 5 '95	"	.57	40
33	Salt River Canal	Chas. A. Johnson	503	June 2 '99	"	2.65	185

DRY CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
16	Henderson Ditch	Chas. Johnson	482	June 5 '95	Irrigation	1.28	90
21	Perkins & Hardman	George Hardman	“	July 29 '95	“	1.71	120
18	Hill Ditch	F. C. Meachin	504	June 29 '95	“	0.78	55
18	“ “	R. G. Bowles	“	“	“	1.21	85
23	Swensen & Olesen	Jos. L. Nield	“	Feb. 21 '98	“	1.15	80

CROW CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
15	Fairview Canal	Thos. Hood	482	July 10 '95	Irrigation	0.85	60
16	W. Br. Crow Cr. Canal	Eliza Clark	518	Nov. 12 '97	“	0.57	40

WILLOW CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
4	Turner Ditch	W. A. Turner	502	Sept. 26 '94	Irrigation	1.15	80
4	“ “	W. B. Izatt	“	“	“	0.57	40
4	“ “	John Fluckigar	“	“	“	1.15	80
4	“ “	J. A. Fluckigar	“	“	“	0.50	35
8	Hepworth Ditch	Mary E. Hepworth	“	May 26 '99	“	1.71	120
9	Willow Ditch	C. and E. Anderson	“	June 2 '99	“	0.57	40

SWIFT CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
20	Halling Ditch	B. L. Gardner	503	May 8 '95	Irrigation	1.15	80
20	Halling Ditch	Ozro Gardner	"	"	"	2.28	160
21	North Canal	John Miles	"	June 5 '95	"	1.15	80
21	" "	L. C. Jensen	"	"	"	1.00	70
21	" "	John A. Hyde	504	"	"	1.71	120
21	" "	Jos. E. Hepworth	"	"	"	0.57	40
21	" "	Jens J. Jensen	"	"	"	0.85	60
21	" "	E. M. Thurman	"	"	"	2.57	180
21	" "	Fred Hale	"	"	"	1.15	80
21	" "	Austin C. Hyde	"	"	"	1.15	80
21	" "	Gibson A. Condie	"	"	"	0.40	28
21	" "	Carl C. Lowder	509	"	"	0.71	50
21	" "	Oley Anderson	"	"	"	1.42	100
21	" "	Christian Nelson	"	"	"	1.71	120
24	Lowder Ditch	Elizabeth A. Lowder	"	May 26 1899	"	1.15	80

COTTONWOOD CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
17	Taggart Ditch	Carl Anderson	504	June 2 '99	Irrigation	0.21	15
18	Cregar Extension	F. P. Cranney	"	June 21 '99	"	3.43	240
18	Cregar Extension	H. K. Cranney	"	"	"	1.00	70

ANDERSON CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	J. C. D. Ditch	Chas. Johnson	504	June 10 '97	Irrigation	0.28	20

STRAWBERRY CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
14	Grand Canal....	Geo. G. Weaver.........	537	June 24 '95	Irrigation	1.17	80
14	" "	A. F. Bracken	"	"	"	1.85	120
14	" "	Roswell Dana	"	"	"	0.85	60
14	" "	J. W. Titensor	"	"	"	1.85	120
14	South End Ditch.........	S. D. Allen..............	"	"	"	0.57	40

BIRCH CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
2	Wolfly.Crouch Ditch....	R. E. Wolfly...........	504	Aug. 15 '94	Irrigation	2.28	160

SPRING CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Roberts Ditch..........	David O. Roberts	537	Feb. 8 '95	Irrigation	2.38	160

LOST CREEK, Tributary of Salt River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Mallory Ditch	Chas. H. Mallory	497	June 14 '93	Irrigation	6.85	480

BLACK'S FORK, Tributary of Green River.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
30	Wood Ditch............	John Wood	518	July 30 '95	Irrigation	2.24	157
	SMITH'S FORK, Tributary of Black's Fork.						
29	Hyrum Strong No. 1.....	Hyrum Strong	518	Dec. 10 '96	Irrigation	0.75	53
29	Orson Strong............	Orson Strong............	"	"	"	1.81	127
30	Kidman-Wall Ditch	R. W. Kidman..........	"	Dec. 22 '96	"	1.97	138
31	Joseph Race No. 2.......	Joseph Race.............	"	May 7 1897	"	0.28	20
	LA BARGE CREEK, Tributary of Green River.						
27	Smith Ditch............	Hyrum Smith...........	504	June 14 97	Irrigation	2.67	187

APPENDIX.

WATER LAWS AND AMENDMENTS TO SAME ENACTED IN 1901.

The following laws relating to the use of water were enacted by the Legislature of 1901:

RE-OPENING THE DECREES OF THE BOARD OF CONTROL IN CERTAIN CASES.

Section 1. The final orders or decrees of the State Board of Control, in the proceedings provided by law for the adjudication and determination of rights to the use of the public waters of the State, shall be conclusive as to all prior appropriations, and the rights of all existing claimants upon the stream or other body of water lawfully embraced in the adjudication, subject, however, to the provisions of law for re-hearings in such proceedings and for the re-opening of the orders or decrees therein and for appeals from such orders or decrees.

Section 2. Whenever the State Board of Control shall, as provided by law, proceed to adjudicate and determine the rights of the various claimants to the use of water upon any stream or other body of water, it shall be the duty of all claimants interested in such stream or other body of water to appear and submit proof of their respective appropriations, at the time and in the manner required by law; and any such claimant who shall fail to appear in such proceedings and submit proof of his appropriations shall be barred and estopped from subsequently asserting any rights theretofore acquired upon the stream or other body of water embraced in such proceedings, and shall be held to have forfeited all rights to the use of said stream theretofore claimed by him. Provided, that any person claiming the right to the use of water of any stream heretofore adjudicated by the Board of Control who, having been or claiming to have been at the time an appropriator therefrom, shall have failed to appear and submit proof of his claim shall be permitted within one year after the passage of this Act, but not thereafter, to apply for a hearing and an adjudication of his rights in the manner hereinafter provided; and Provided, further, that any claimant upon whom no other service shall be made than by publication in the newspaper, of the notice of such proceedings and taking of testimony, may, within one year after the entry of the order or decree of the Board, determining the rights of the various claimants upon any particular stream or other body of water, have the same opened and be let in to give proof of his appropriation; but before the decree of the Board can be opened in such case, the applicant shall give notice to all other persons interested in the water of the stream or other body of water in question, and shall with his petition file the same kind of proof as required of claimants in original hearings and make it appear to the satisfaction of the Board that during the pendency of the proceedings he had no actual notice thereof in time to appear and make proof of his claim; and all parties interested may present affidavits as to the matter of actual notice of the applicant.

Section 3. Any person claiming the right to the use of water of any stream, heretofore adjudicated by the Board of Control, being or claiming to be an appropriator therefrom, who shall have failed to appear and submit proof of his claims at the time of the adjudication of the rights of the various claimants to the water of such stream, shall be permitted at any time within one year after the passage of this Act, but not thereafter, to file a petition with the Board of Control for a hearing in respect to his claims to the use of water from such stream, and for the re-opening of the decree heretofore entered for that purpose. Said petition shall embrace all the particulars required by law in the proofs of claimants in original proceedings before the Board, and shall be verified by the oath of the claimant. Upon the filing of said petition, if it shall appear to the Board that the petitioner had not appeared in the proceedings and submitted proof of his claims, the State Board shall make and enter an order re-opening the decree heretofore entered, determining the rights to the use of water upon such stream, for the purpose of receiving the testimony on behalf of the petitioner and determining his rights to the use of such water. Thereupon the Division Superintendent of the proper Division shall fix a time and place for taking the testimony and shall give notice thereof as required by the provisions of Sections 861 and 862, of the Revised Statutes, 1899, in the case of original hearings. The petitioner shall, at the time of submitting his proof and testimony at such hearing, file a correct map of his ditch and the lands irrigated therefrom, Provided, that the hearings permitted by this section shall be subject to the same provisions of law as to inspection of testimony, contests and appeals, as in other cases.

PREVENTING OBSTRUCTIONS TO THE FLOW OF WATER IN IRRIGATING DITCHES.

Section 1. Any person, association or corporation desiring or intending to drive or float logs, timber or lumber down or upon any stream in this State shall before commencing operations apply to the State Engineer for a permit to drive or float the same. Such application shall be in writing and shall state that the driving of such logs, timber or lumber will be conducted with all possible expedition and in such manner as not to interfere with or injure any irrigating ditch or other property along the stream on which said drive is to take place and the applicant shall, if required by the State Engineer, give bond to the State of Wyoming in such sum as the State Engineer may deem sufficient, conditioned for the conducting of said drive without delay, and for the protection of the owners of irrigating ditches and property along the stream whereon said drive is to be made. When said permit is issued, the said applicant may proceed to conduct said drive upon the stream or streams therein mentioned; Provided, however, that no permit shall be granted allowing any logs, timber or lumber to be left in or upon any stream so as to be frozen in during winter.

REGULATING THE DRIVING OR FLOATING OF LOGS, TIMBER OR LUMBER ON STREAMS.

Section 1. If any person or corporation engaged in floating or driving logs, timber or lumber down or upon any stream in the State of Wyoming, shall purposely or negligently cause or suffer any logs, timber or lumber so floated or driven to obstruct or interfere with the free and unobstructed flow of water into or through any irrigating ditch without the consent of the owner thereof, or to interfere with the lawful use of water by the owner thereof, for irrigating purposes, shall on conviction thereof be fined in any sum not less than one hundred dollars nor more than one thousand dollars, said fines to be paid into and for the benefit of the Common School Fund of the County in which such obstruction takes place.

AMENDMENTS.

The following amendments to laws already in force were also passed, the amended sections retaining the same numbers as in the Revised Statutes:

RELATING TO DUTIES OF WATER COMMISSIONERS.

Section 891. Said Water Commissioner shall, as near as may be, divide, regulate and control the use of the water of all streams within his district by such closing or partial closing of the headgates as will prevent the waste of water, or its use in excess of the volume to which the appropriator is lawfully entitled, and any person who may be injured by the action of any water commissioner, or by his failure to act pursuant to this chapter, shall have the right to appeal to the division superintendent, and from his decision the party aggrieved may appeal to the State Engineer. And from the decision of the State Engineer in said matter, an appeal may be had to the District Court of the County wherein the ditch or ditches over which the controversy arises are situated.

Section 894. Said Water Commissioners shall begin their work at the written call of two or more appropriators, owners or managers of ditches. Said Water Commissioners may begin at the written call of one appropriator, owner or manager if the reasons given for the same are deemed sufficient by the Commissioner.

DUTIES AND POWERS OF THE STATE BOARD OF CONTROL.

Section 865. Upon the date named in the notice provided for in the preceding section, the Division Superintendent shall begin the taking of said testimony and shall continue until said testimony shall be completed; provided, that in case the Division Superintendent of any water division is directly or indirectly interested in the water of any stream of his division, or is prevented by illness or other disability from the taking of such proofs, the taking of evidence so far as relates to said stream shall be under the direction of the Division Superintendent of the next nearest water division or under the direct personal supervision of the State Engineer as may be deemed by the Engineer the most expedient. Provided, that in the taking of proofs of appropriation of water made under a permit issued by the State Engineer, such permits having been issued subsequent to the adjudication of the waters of the stream from which the appropriation is made, the Superintendent may, in his discretion, authorize the water commissioner of the district in which the appropriation is made, to take such proofs. Upon the taking of the proofs so ordered, the Water Commissioner shall at once forward them to the Division Superintendent. The Water Commissioner shall take no proofs except those specifically ordered by the Division Superintendent. Provided, further, that upon taking such proof the Water Commissioner shall be paid for such work out of the contingent allowed the Division Superintendent in whose district such work is done.

RELATING TO THE CONSTRUCTION OF HEADGATES AND MEASURING DEVICES IN DITCHES AND STREAMS.

Section 930. The appropriator of any of the public waters of the State shall maintain, to the satisfaction of the Division Superintendent of the district in which the appropriation is made, a substantial headgate at the point where the water is diverted, which shall be of such construction that it can be locked and kept closed by the water commissioner; and such appropriator shall construct and maintain, when required by the Division Superintendent, a flume or measuring device, as near the head of such ditch as is practicable, for the purpose of assisting the water .commissioner in determining the amount of water that may be diverted into said ditch from the stream. And every owner or manager of a reservoir, located across or upon the bed of a natural stream, shall be required to construct and maintain, when required by the Division Superintendent, a flume or measuring device of a plan to be approved by the State Engineer, below such reservoir at a point not to exceed 600 feet therefrom, and a flume or measuring device above such reservoir on each and every stream or source of supply discharging into such reservoir, for the purpose of assisting the water commissioner or superintendent in determining the amount of water to which prior appropriators are entitled and thereafter diverting it for such prior appropriators' use.

If any appropriator of public waters that have been adjudicated upon, should refuse or neglect to construct and put in such headgate, or measuring device, after ten days' notice to do so by the Division Superintendent, it shall be the duty of the Water Commissioner of the district in which such headgate is located, on order of the Division Superintendent, to close such ditch to the passage of water, and the same shall not be opened or any water diverted from the source of supply, under the penalties prescribed by law for the opening of headgates lawfully closed, until the requirements of the Division Superintendent as to such headgate or measuring device have been complied with, and if any owner or manager of a reservoir located across the bed of a natural stream shall neglect or refuse to put in such measuring device after ten days' notice to do so by the Division Superintendent, the Water Commissioner shall open the sluice gate or outlet of such reservoir and the same shall not be closed under penalties of the law for changing or interfering with headgates, until the requirements of the Division Superintendent as to such measuring device are complied with.

UNLAWFUL INTERFERENCE WITH WATER RIGHTS.

Section 971. Any person who shall wilfully open, close, change or interfere with any headgate or water-box without authority, or who shall wilfully use water or conduct water into or through his ditch which has been lawfully denied him by the Water Commissioner or other competent authority, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be fined in a sum not exceeding one hundred dollars or imprisonment in the county jail for a term not exceeding six months, or by both such fine and imprisonment; (and the possession or use of water when the same shall have been lawfully denied by the Water Commissioner or other competent authority shall be deemed prima facie evidence of the guilt of the person using it.)

RELATING TO BRIDGES ACROSS DITCHES.

Section 1959. Any person, company, corporation or association of persons, operating or maintaining in whole or in part, either as owners, agent, occupant or appropriator any ditch, canal or water course, not being a natural stream, for irrigation or any other, and different purpose, shall put in, construct, maintain and keep in repair at his, her, its or their expense, for one year, where the same crosses any public highway or publicly traveled road, a good substantial bridge, not less than fourteen feet in width, over such ditch, canal or water course where it crosses such road. Any violation of the provisions of this section shall be a misdemeanor, and upon conviction thereof, the person so offending shall pay a fine in a sum not exceeding one hundred dollars for each day such ditch, canal or water course shall be unbridged, insufficiently bridged, or suffered to remain out of repair. Provided, that after the expiration of one year from the construction of said bridge, the road supervisor of the road district in which said bridge is located shall, upon being notified by the owner or owners of the ditch, canal or water course over which such bridge is constructed, at once inspect such bridge, and if found in a good and lawful condition, shall accept the same for the county in which it is located, and said bridge shall thereafter be maintained by the said county.

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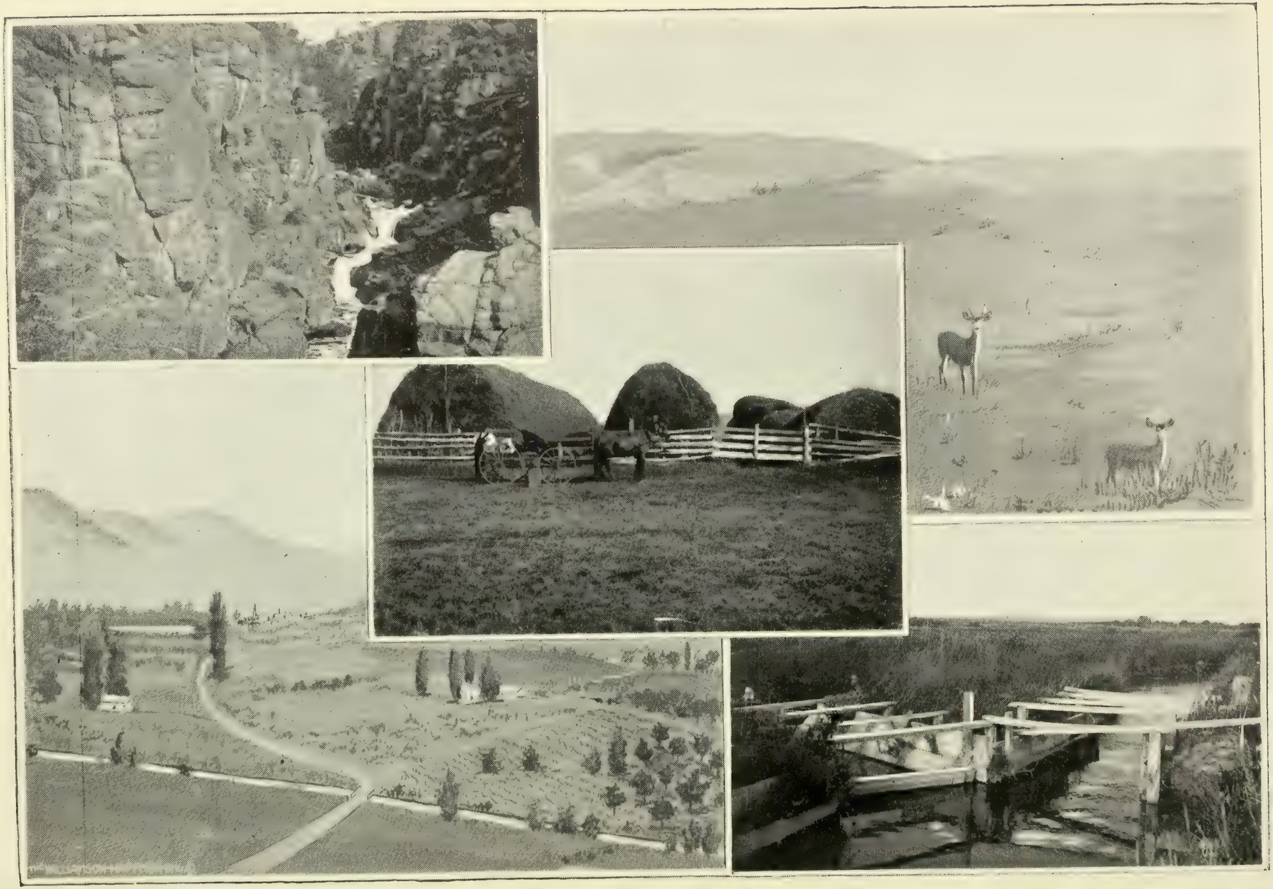

Cottonwood Canon, near Laramie Peak.

Ranch on Bear River.

Division Box on Horse Creek.

IRRIGATION SCENES IN WYOMING.

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FOURTH
BIENNIAL REPORT
OF THE

STATE ENGINEER

TO THE
GOVERNOR OF WYOMING

FOR THE
Years 1897 and 1898

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LETTER OF TRANSMITTAL.

CHEYENNE, NOV. 30TH, 1898.

TO THE HONORABLE
WILLIAM A. RICHARDS,
GOVERNOR.

SIR:—

As provided for in Section 12, Chapter 8, Laws of 1890-91, I have the honor to submit a report of the work of this office during the past two years, with such recommendations as experience has led me to believe will increase the efficiency of the water laws and promote the growth of the interests connected therewith.

Yours very respectfully,
ELWOOD MEAD,
State Engineer.

CONTENTS.

Letter of Transmittal ... 5
List of Officers in Charge of Irrigation ... 9
Permits for New Ditches ... 11
Adjudication of Water Rights ... 12
Summary of Certificates of Appropriation Issued January 1, 1891, to November 1, 1898 ... 13
Surveys of Streams and Ditches ... 22
Increase of Office Work ... 23
Ditch Surveys—Report of Wm. M. Gilcrest, Assistant Engineer ... 25
Record of Ditch Measurements ... 32

Stream Gagings—

Influence of Seepage, Etc ... 57
Water Supply of Horse Creek ... 63
Table of Gagings of Horse Creek, and Ditches ... 65
Agricultural Problems and Possibilities of Northern Wyoming ... 72
Irrigation Investigations for the Department of Agriculture ... 105
Stream Measurements—Report of C. T. Johnston, Assistant Engineer 106
Reservoirs ... 115

Selecting State Land—

Leasing Grazing Land ... 122
Do Stockmen and Farmers Desire to Lease the Land They Use? ... 125
Shall the Arid States or General Government Lease Them? 142
State or National Aid for Construction of Canals and Reservoirs ... 143
Report of Jas. A. Johnston, Superintendent Division No. 1 ... 145
Report of Edward Gillette, Superintendent Division No. 2 ... 149
Report of N. H. Brown, Superintendent Division No. 3 ... 157
Report of Chas. H. Priest, Superintendent Division No. 4 ... 159
Recommendations ... 160
Rights to Stored Water ... 161
Notice of Applications for Water Rights ... 161
Fees for Issuing and Recording Certificates of Appropriation 162
Acknowledgments ... 162
Tables of Permits to Appropriate Water and of Certificates of Appropriation of Water Issued between November 30, 1896, and November 30, 1898 ... 163

LIST OF ILLUSTRATIONS.

Frontispiece ....

Map of La Prele Creek .... Facing 25

Natural Bridge on La Prele Creek .... " 28

Drop on Piney and Cruse Creek Ditch .... " 57

Falls on Big Goose Creek—3 plates .... " 57

Kearney Lake .... " 77

Lake on Prairie Dog .... " 77

Lake on Clear Creek .... " 77

Lake on Ten Sleep Creek .... " 77

Lake Mead .... " 78

Elk Lake .... " 78

Cloud Peak Lake .... " 78

Outlet Cloud Peak Lake .... " 78

Kearney Lake and Dome Lake .... " 82

Ditch across Divide between Little and Big Goose Creeks .... " 87

Dome Lake Reservoir .... " 87

Dam at Outlet Dome Lake .... " 87

Union Pass .... " 99

Jackson Lake .... " 114

Headgate and Dam of Wyman & Irwin Canal .... " 121

Headgate and Dam of Beckwith Co. .... " 122

LIST OF OFFICERS

IN CHARGE OF

IRRIGATION IN WYOMING.

ELWOOD MEAD	State Engineer
W. M. GILCREST	Assistant Engineer
CLARENCE T. JOHNSTON	Assistant Engineer

DIVISION SUPERINTENDENTS.

J. A. JOHNSTON, Sec'y State Board of Control and Sup't Water Div. No. 1	Cheyenne
EDWARD GILLETTE, Sup't Water Div. No. 2	Sheridan
N. H. BROWN, Sup't Water Div. No. 3	Lander
C. H. PRIEST, Sup't Water Div. No. 4	Evanston

WATER COMMISSIONERS.

DIVISION No. 1.

W. D. Pease,	Commissioner	Dist.	No.	1,	Cheyenne
Geo. W. Snow,	"	"	"	2,	Little Bear
J. L. Jordan,	"	"	"	3,	Iron Mountain
Price Jacobs,	"	"	"	4,	Laramie
C. H. Jones,	"	"	"	5,	Laramie
Wm. Brauer,	"	"	"	6,	Saratoga
Horace Nichols,	"	"	"	7,	Collins
J. M. Calvert,	"	"	"	8,	Dixon
Daniel Fitgar	"	"	"	10,	Johnstown
J. W. Price,	"	"	"	11,	Casper
W. F. King,	"	"	"	12,	Rock Creek
Price Martin	"	"	"	13,	Glendo
D. A. Wucherer,	"	"	"	14,	Lusk

DIVISION No. 2.

F. B. Fawcett,	Commissioner	Dist.	No.	1,	Newcastle
John Ridley,	“	“	“	2,	Buffalo
A. C. Warburton,	“	“	“	3,	Buffalo
M. K. Wood,	“	“	“	4,	Sheridan
Thos. T. Howd,	“	“	“	5,	Dayton
Adolphus Yonkel,	“	“	“	6,	Slack

DIVISION No. 3.

A. P. Battrum,	Commissioner	Dist.	No.	1,	Lander
L. P. Hudson,	“	“	“	2,	Lander

DIVISION No. 4.

Chas. Rathburn,	Commissioner	Dist.	No.	1,	Fontenelle
M. Henderson,	“	“	“	8,	Afton
John Shirk,	“	“	“	3,	Robertson

PERMITS FOR NEW DITCHES.

Six hundred and forty-six permits to appropriate water through new ditches and 164 permits for enlargements of old ones have been issued during the past two years. These permits describe 366,653 acres of land to be irrigated. In both the acreage to be watered and in the cost of these ditches there is a falling off from the record of the two previous years. This is probably due to the fact that no new canals, to water land under the Carey Act, have been started since the last report was prepared. So far as development is concerned the period covered by this report presents nothing of special interest. Individual ditches from small streams have been the unvarying rule. The following table gives a comparative and total summary of the records of water right filings for the past four years:

SUMMARY OF PERMITS TO APPROPRIATE WATER, ISSUED BY THE STATE ENGINEER FROM NOV. 15TH, 1894, TO NOV. 15TH, 1898.

Number of acres to be irrigated under permits issued in 1895 and 1896		847,667
Number of acres to be irrigated under permits issued in 1897 and 1898		366,653
TOTAL		1,214,320
Estimated cost of works for irrigation in 1895 and 1896		$2,235,526
Estimated cost of works for mining and municipal purposes in 1895 and 1896		507,400
Estimated cost of works for irrigation in 1897 and 1898		1,831,374
TOTAL		$4,066,900
Number of enlargement permits 1895 to 1898	293	
Number of acres to be irrigated	118,887	
Estimated cost		$ 208,623

ADJUDICATION OF WATER RIGHTS.

Considerable progress has been made in the determination of priorities of rights acquired under the Territorial laws and a beginning made in issuing Certificates of Appropriation to the holders of rights under the State law. A constantly increasing interest is being manifested by irrigators in the settlement of these rights, and in the relation which their priority number bears to the total discharge of the stream.

These adjudications include more than one-half of the territorial rights, but do not embrace one-half of the land reclaimed, as rights to water have not as yet been established on many of the streams most used in irrigation. In Division One, the North Platte, Laramie and Sweetwater rivers have yet to be adjudicated. In Number Two priorities on Powder River have yet to be established. In Number Three the rights of irrigators on all the streams in the Big Horn Basin, except No Wood River, are still unsettled. The need of adjudicating some of these rights is urgent, and provision should be made for carrying on the work with at least as rapid progress as has been made during the past eight years. In Division No. Four all of the streams where controversies were acute have been dealt with, and there need be no further adjudications in this section until titles to water on the more important streams of Divisions One and Two have been established.

The following table gives a summary of all the completed adjudications from the enactment of the State law to date.

SUMMARY of Rights to Water Determined by the State Board of Control between Jan. 1, 1891, and Dec. 30, 1898.

CERTIFICATES OF APPROPRIATION OF WATER ISSUED BETWEEN JAN. 1, 1891, AND NOV. 1ST, 1892.

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Little Horse Creek	20	54.86	3,858
1	Little Laramie River	132	676.13	48,986
1	Soldier Creek.................	11	16.92	1,180
1	Cooper "	15	44.67	4,470
1	Dutton "	8	90.50	6,240
1	Four Mile Creek	6	27.43	1,920
1	Seven Mile "	10	40.77	2,865
1	Pass Creek	44	125.89	8,716
1	Lake "	7	12.84	895
1	Cedar "	11	18.39	1,240
1	Brush "	11	88.23	6,150
1	Big "	12	48.78	3,400
1	Beaver Creek	18	33.47	2,346
1	Grand Encampment River	15	40.71	2,823
1	Cow Creek	28	72.74	5,140
1	Calf "	5	11.42	800
1	Spring "	41	122.90	9,277
1	Jack "	19	77.42	5,375
1	Bates "	21	35.09	2,417
1	Chugwater Creek	109	274.87	19,640
1	Lodge Pole "	44	156.60	10,732
1	Lone Tree "	55	33.43	2,405
1	North Bear "	6	9.05	635
2	Smith Creek..................	7	13.97	980
2	Wolf "	24	137.04	9,595
2	Little Goose Creek	88	211.88	14,673
2	Soldier Creek.................	11	22.24	1,545
2	Big Goose Creek	97	378.14	13,287
2	Tongue River.................	27	62.12	3,680
2	Columbus Creek	29	34.80	2,359
2	Young's Creek................	2	4.36	306
2	Amsden "	6	6.21	435
2	Pass Creek	24	43.33	2,098
2	Twin "	4	3.78	265
4	Fontenelle Creek.............	26	43.07	2,985

Certificates of Appropriation of Water Issued between Nov. 1st, 1892, and Sept. 1st, 1894.

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Elkhorn Creek	12	32.73	2,290
1	Cabin Creek	1	9.14	640
1	Dobbins' Springs	1	1.00	70
1	Loomis Creek	1	.57	40
1	Dry Muddy Creek	2	3.75	960
1	Squaw Creek	2	2.56	180
1	Garden "	8	46.25	3,240
1	Snake River	32	61.63	4,370
1	Savery Creek	31	53.00	3,708
1	Muddy "	33	77.65	5,423
1	Muddy "	5	13.28	920
1	Battle "	4	1.42	95
1	Pine Tree Creek	2	.86	60
1	Horse Shoe Creek	32	61.02	4,074
1	Pass Creek	2	14.85	1,040
1	Hecht Creek	1	2.14	150
1	East Fork Muddy Creek	1	.57	40
1	Little Laramie River	1	2.00	140
1	Beaver Creek	1	4.14	290
1	Spring Creek	1	.70	50
1	South Spring Creek	1	1.14	80
1	Sage Creek	2	1.91	132
1	Separation Creek	8	10.79	730
1	Spring or Alkali Creek	2	2.66	186
1	Raw Hide Creek	12	37.11	2,596
1	Little Laramie River	3	13.42	840
1	Muddy Creek	12	10.24	718.1
2	Columbus Creek	1	1.80	122
2	South Beaver Creek	4	1.66	92
2	Pass Creek	3	2.55	178
2	Twin "	2	2.285	160
2	Big Goose Creek	13	25.36	1,775
2	Squaw Creek	11	5.47	299.5
2	Hat Creek	2	7.92	565
2	Redwater Creek	13	32.42	794
2	Hunyadi Mineral Springs	1	5.00	350
2	Oil Creek	2	5.00	350
2	Niobrara Creek	19	28.01	1,593.5
2	Belle Fourche River	27	29.87	1,974

SUMMARY.—*Concluded.*

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
3	Beaver Creek................	8	19.36	1,300
3	North Fork Popo Agie	46	94.16	4,219.5
3	Big Popo Agie River...........	98	118.91	5,081.16
3	Twin Creek	13	6.52	376.5
3	Willow Creek	12	5.87	349.25
3	Red Canon Creek............	3	.38	22.75
3	Deep Creek...................	2	.54	38
3	Barrett "	7	.36	25
3	Crooked Creek...............	1	2.86	200
3	Hornecker Creek.............	14	5.52	363.5
3	Little Popo Agie River	30	30.73	1,934.6
3	Commissary Springs	1	.45	17
3	Baldwin Springs..............	1	2.30	160
3	North Fork Popo Agie River...	1	.66	40

CERTIFICATES OF APPROPRIATION OF WATER ISSUED BETWEEN SEPT. 1ST, 1894, AND SEPT. 1ST, 1896.

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Spring Creek	4		
1	Sand Creek	18	25.46	1,768
1	Horse Creek	1	8.28	580
1	Little Laramie River	3	3.42	240
1	Spring (Sec. 20-16-85)	1	.10	
1	Lodge Pole Creek	1	6.28	440
1	Cotton Creek	2	2.28	160
1	Horse "	11	11.37	790
1	Cow Creek	1	1.43	100
2	Stockade Beaver	38	79.46	2,039
2	Skull Creek	10	15.89	1,113
2	Twin "	13	10.085	710
2	Tongue River	35	60.39	3,210
2	Bush Creek	1	.71	50
2	Big Goose Creek	125	282.18	19,779.5
2	Clear Creek	66	517.16	14,514
2	French Creek	13	10.44	727
2	Rock Creek	53	187.37	13,119
2	Sayles Creek	9	8.18	571
2	Shell "	4	5.52	387
2	Johnson Creek	2	3.13	220
2	Piney Creek	224	325.12	24,440.51
2	Prairie Dog and Tributaries	8	5.45	389
2	East Pass Creek	12	17.42	1,216
2	Spring	1	.10	5
2	Porcupine Creek	1	2.	Mining
3	Meadow Gulch	1	.50	40
3	East Squaw Creek	1	.20	17.5
3	Big Popo Agie River	2	.86	60
4	Salt River and Tributaries	62	285.40	5,295
4	Dry Creek	23	18.7	1,220
4	Cottonwood Creek	29	29.8	1,995
4	Stump Creek	17	27.8	1,890
4	Crow "	22	30.1	2,042
4	Strawberry Creek	26	26.7	1,799
4	Swift Creek	99	110.7	4,055.9
4	Willow "	4	14.3	150
4	Dry Canon Creek	2	.8	45
4	Cedar Creek	2	2.1	140

SUMMARY.—*Concluded.*

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
4	Flat Creek	2	.9	55
4	Nickel Springs Creek	1	.18	120
4	Birch Creek	1	.6	40
4	Vail "	3	3.9	265
4	Hanson Creek	1	.3	20
4	Tom's Canon Creek	3	5.1	350
4	Harmon Creek	1	.3	20
4	Spring "	2	3.0	205
4	Campbell Springs	1	.3	15
4	Hurd Canon and Astle Springs	1	.1	
4	Jensen Creek	1	.3	20
4	Hepworth Springs	1	.1	
4	Phillips Creek	2	2.2	37
4	Mill Creek	1	.6	40
4	Bradshaw Springs	1	.1	6
4	Jensen Springs	1	.8	50
4	Spring Branch	1	3.5	240
4	Henrie Springs	1	.2	10
4	Stewart Creek	1	4.6	320
4	Fontenelle Creek	1	.9	60
4	La Barge "	36	87.04	6,080

CERTIFICATES OF APPROPRIATION OF WATER ISSUED BETWEEN SEPT. 1ST, 1896, AND NOV. 1ST, 1898.

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	North Spring Creek	3	11.14	780
1	Little Laramie River	7	29.43	2,060
1	Hawk Springs	1	8.57	600
1	Pass Creek	1	2.29	160
1	Cooper Creek and Tributaries	15	60.53	4,240
1	Dutton Creek	8	91.09	5,080
1	Medicine Bow River	57	111.68	7,753.5
1	Troublesome Creek	3	8.46	590
1	Difficulty Creek	1	.79	55
1	Little Medicine Bow	12	9.70	675
1	North Fork Little Medicine Bow	1	.57	40
1	Boberg Creek	1	2.28	160
1	Sullivan "	3	11.10	778
1	Rock Creek	40	191.43	12,720
1	One Mile Creek	3	5.13	360
1	Three Mile "	13	25.02	1,740
1	Watkins "	2	5.71	400
1	Foote Creek	1	8.85	620
1	Spring "	1	.28	20
1	Spring	1	.23	
1	Wagon Hound Creek	7	9.98	695
1	West Fork Wagon Hound Cr.	2	2.40	160
1	Mule Creek	1	2.71	190
1	Spring Creek	1	.86	60
1	Halleck "	5	48.60	3,400
1	Halleck " No. 4	2	1.49	105
1	Mill Creek	10	11.68	811
1	U. L. "	4	9.05	630
1	Fish "	1	1.28	90
1	Johnson Creek	3	3.39	237
1	Bridger "	2	3.42	240
1	Mike Hawley Creek	1	.28	20
1	Spring Creek	2	1.11	75
1	O'Mera "	1	.43	30
1	Bates "	1	1.43	100
1	Jack "	1	3.43	240
1	Muddy "	3	3.20	225
1	Clear Fork Muddy Creek	1	.52	37
1	Corral Creek	4	.40	28.5

SUMMARY.—*Continued.*

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Horse Shoe Creek	4	3.36	236
1	Mill Creek	2	3.82	268.28
2	Tongue River	18	34.41	2,413
2	Big Goose Creek	23	32.64	2,282.5
2	Rapid Creek	1	4.54	318
2	Bush "	1	.71	50
2	Pearson's Spring	1	.62	30
2	Cave Creek	4	2.13	149
2	High Water	1	1.50	105
2	Oil Creek	1	5.40	377
2	Johnson Creek	1	.71	50
2	Young's "	1	.50	35
2	Clear Creek	2	5.44	380.75
2	East Pass Creek	1	.21	15
2	Hanna Creek	1	.21	15
2	Springs	1	.43	30
2	Trabing Creek	1	3.43	240
2	Little or Stockade Beaver Creek	2	11.37	785
2	Wolf Creek	2	.51	36
2	Piney "	1	2.28	160
2	Mead "	1	.57	40
3	Big Popo Agie River	3	3.19	223
3	Robinson Gulch	1	.40	28
3	Pass Creek	1	.57	40
3	North Fork Popo Agie	1	1.77	124
3	No Wood River	21	138.17	1,619
3	Box Elder Creek	5	2.37	166
3	Upper or Little Canon Creek	5	6.60	462
3	Crooked Creek	2	2.14	150
3	Otter Creek	5	5.47	384
3	Spring Creek	6	7.44	530
3	Ten Sleep Creek	7	16.44	1,120
3	Brokenback Creek	12	4.24	295
3	Paint Rock "	23	28.35	1,981.48
3	Cherry Creek	1	.26	18
3	Lower or Big Canon Creek	3	8.56	600
3	Buffalo Flat Creek	1	.93	65
3	Medicine Lodge Creek	10	13.90	1,022
3	Coon Hollow or Coon Creek	1	.26	18
4	Dry Creek	3	4.78	335
4	Black's Fork Creek	52	60.0275	6,145.5
4	Smith's " "	55	61.09	4,219
4	Ham's " "	29	81.195	5,563
4	Big Muddy "	8	17.765	1,188
4	Little Muddy "	9	21.54	1,495
4	Little Creek	2	1.55	102

SUMMARY.—*Continued.*

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
4	Silver Spring	1	1.15	80
4	Albert Creek	1	.60	40
4	Clear "	4	5.00	325
4	La Selle "	5	2.28	155
4	Willow "	3	1.70	112
4	Corral "	1	.57	40
4	Beaver "	3	9.46	674
4	Camp "	1	1.40	95
4	Dry Creek	11	13.14	920
4	Swift "	15	13.85	970
4	South Dry Creek	2	3.14	220
4	Birch Creek	1	.86	60
4	Baker Canon or Lee Creek	1	.42	30
4	Crow Creek	3	1.	70
4	Cottonwood Creek	8	7.95	549
4	Salt River	4	5.35	375
4	Willow Creek	3	5.20	365
4	Strawberry Creek	8	12.16	852
4	Sprague Creek	1	.43	30
4	Cedar "	1	1.71	120
4	Brown "	1	.43	30
1	Little Laramie River	3	8.27	580
1	Mill Creek	1	6.40	449
1	Horse Shoe Creek	1	.40	28
2	Piney Creek	1	2.14	150
2	Big Goose Creek	1	.57	40
2	Tongue River	1	2.71	190
1	Cottonwood Creek	32	18.65	1,310
1	Elkhorn Creek	7	4.92	343
1	La Bonte "	14	21.43	1,493.50
1	West Fork La Bonte	5	13.61	953
1	Reid Creek	7	1.96	137
1	Owl "	7	3.13	218
1	Indian or Wilson Creek	5	1.32	92
1	Mill Creek	7	2.3	141
1	Wagon Hound Creek	15	15.15	1,071
1	Guthrie Creek	1	.70	50
1	Latham "	1	.30	20
1	La Prele Creek	59	47.16	3,321
1	Little La Prele	2	.61	42
1	Red Canon Creek	4	2.41	167
1	Beaver Creek	8	2.80	196
1	Deadwood Creek	5	1.68	116
1	Buckshot Creek	3	.78	55
1	Wolf Creek	1	.10	7
1	Blue Nose Creek	2	.52	36

SUMMARY.—*Concluded.*

Div. No.	NAME OF STREAM	Total No. of Appropriations	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Spring	3	.29	19
1	Harris Creek	1	.43	30
1	Moss Agate Creek	1	.02	1
1	Box Elder Creek	25	61.83	4,290
1	Little Box Elder	8	6.65	463
1	Root Creek	2	.67	47
1	Snow Shoe Creek	2	.43	29
1	Hunton Creek	6	3.74	260
1	Buck Creek	1	.80	53
1	Virden Creek	9	2.52	175
1	Strawberry Creek	2	.56	39
1	Twin Creek	1	.30	20
1	Berry Creek	1	.08	5
1	Hay Creek	1	.15	10
1	Grass Creek	1	.15	10
1	Nigger Gulch	1	.15	7
1	Spring Creek	4	2.09	147
1	Grouse Creek	1	.08	5
1	Aspen Creek	1	.15	10
1	Pen Creek	1	.15	10
1	Batts Creek	2	.73	49
1	Willow Creek	5	1.40	93
1	Wood Creek	1	.08	5
1	School Creek	1	.13	9
1	Lindgren Spring Creek	1	.60	40
1	Deer Creek	22	44.33	3,094.70
1	Little Deer Creek	3	3.80	265
1	West Fork Deer Creek	1	.63	44
1	King's Branch	3	3.54	247
1	Willow Creek	3	1.16	80

SUMMARY.

YEAR	Total Number of Streams	Total Number of Certificates of Appropriation Issued	Total Volume Appropriated	Total Number of Acres Irrigated
1891 and 1892.	35	993	3,074.05	203,658
1892 and 1894.	50	548	902.48	55,442.36
1894 and 1896.	60	1,010	2,262.14	113,270.41
1897 and 1898.	153	947	1,678.81	108,986.71
TOTAL....	298	3,498	7,917.48	481,357.48

The most important work of the past two years was the taking of testimony and settlement of rights on La Prele, La Bonte, Box Elder and a number of smaller streams in District Thirteen of Division One. It is believed that the completion of this work will result in a better use of the water supply and greatly promote the extension of the cultivated area. Now that the protection of rights to the natural flow along these streams is assured, the farmers are beginning to give increasing attention to the storage of the water which runs to waste, and the aid of this office in the examination of reservoir sites has been requested. A succeeding portion of this report will give the work done in this direction during the past two years, and it is hoped to materially extend this branch of the duties of the office in the near future.

SURVEYS OF STREAMS AND DITCHES.

The party in charge of W. M. Gilcrest, Assistant Engineer, was engaged during the entire summer of 1897 in the survey of the ditches taking water from the tributaries of the Platte in District Number Thirteen. This survey was not completed in 1897, but Cottonwood, the remaining stream, was finished in 1898. The ditches taking water from Little Tongue River, in Division Number Two, have also been surveyed this year. It will be noticed in the tabulation given below that the 287 ditches surveyed had a total length of just 287 miles. The 482 ditches surveyed during the two preceding years had a length of 480 miles. The close approximation to an average length of one mile to the ditch for the ditches surveyed during the four years is a somewhat singular coincidence.

SUMMARY OF DITCHES SURVEYED IN 1897.

STREAM	Total Number of Ditches	Total Length in Miles
Elk Horn	10	7
La Bonte	61	55
Wagon Hound	19	20
La Prele	62	62
Box Elder	80	75.75
Deer Creek	23	41.75
GRAND TOTAL	255	261.50

SUMMARY OF DITCHES SURVEYED IN 1898.

STREAM	Total Number of Ditches	Total Length in Miles
Cottonwood	32	26

INCREASE OF OFFICE WORK.

Every year marks a continuous increase in the correspondence and clerical work required of the Engineer. About 6,000 titles to water are now of record in this office and not a day passes that there is not some inquiry with reference to them. With the accumulation of these records the labor involved in their examination and the replies to these inquiries becomes more and more important, but in few of these cases is there any charge made for services rendered, except in those instances where fees are required. The following amounts have, however, been collected and paid into the

State Treasury for the recording of water right papers and the preparation of certified copies of official documents:

1896	
October November December	$ 249.25
1897	
January February March	178.00
April May June	444.45
July August September	196.60
October November December	270.50
1898	
January February March	317.00
April May June	292.55
July August September	288.25
TOTAL	$2,236.60

The law requires the Engineer to charge one dollar for the issuance of Certificates of Appropriation. As possession of these certificates is not necessary to the protection of priorities a great many irrigators prefer to leave these documents in the office. The number on hand is very large, running into the hundreds. Some have been in the office for nearly four years. Owing to the necessity for their constant examination there is some danger of their being lost or mislaid, and provision is now being made for recording them here. This was not contemplated in the original law, its purpose being to have them sent at once to the office of the county clerk to be recorded there and there only.

MAP

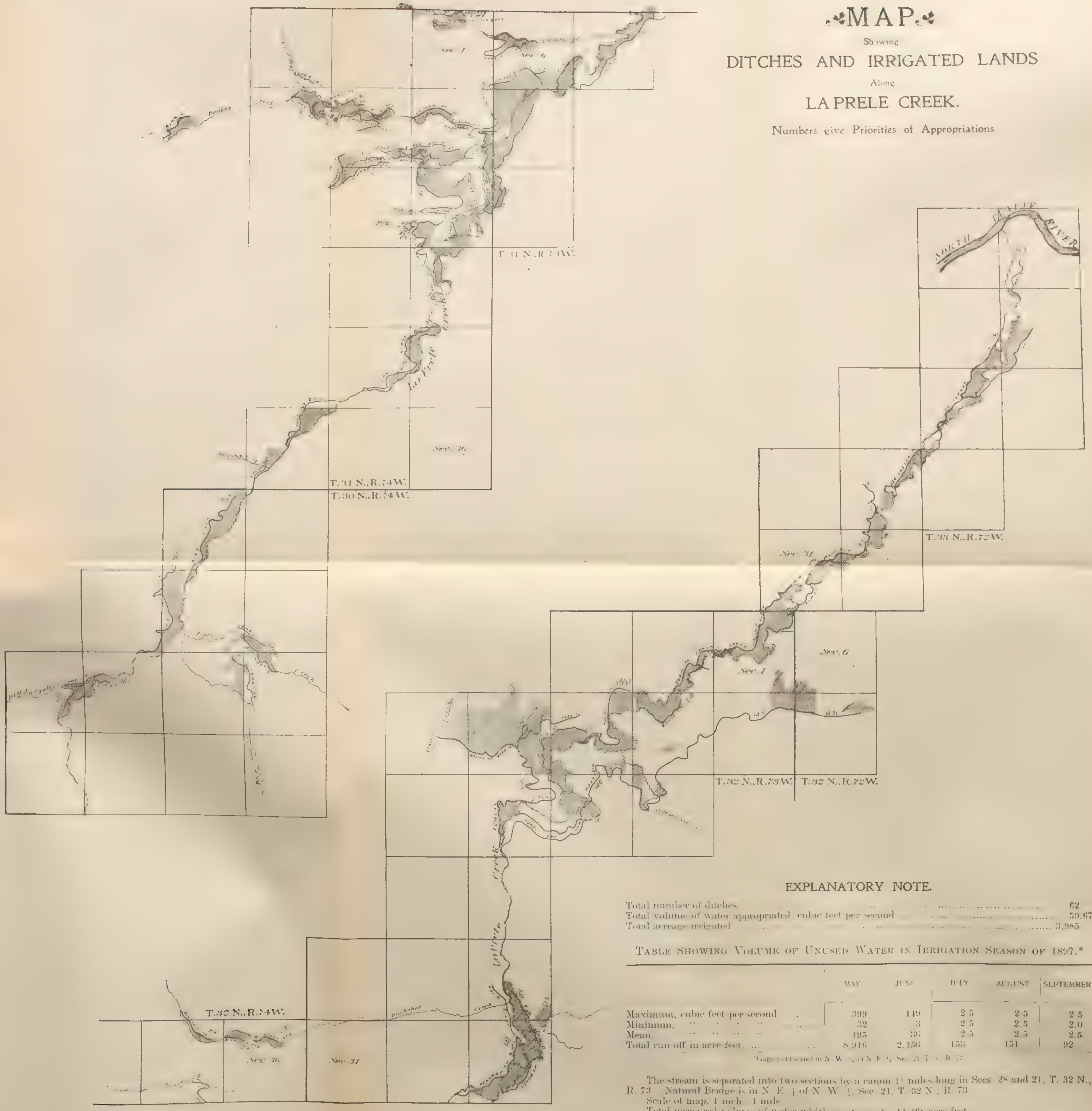
Showing

DITCHES AND IRRIGATED LANDS

Along

LA PRELE CREEK.

Numbers give Priorities of Appropriations



EXPLANATORY NOTE.

Total number of ditches	62
Total volume of water appropriated, cubic feet per second	59.67
Total acreage irrigated	3,985

Table Showing Volume of Unused Water in Irrigation Season of 1897.*

	MAY	JUNE	JULY	AUGUST	SEPTEMBER
Maximum, cubic feet per second	399	149	2.5	2.5	2.5
Minimum, " " " "	32	3	2.5	2.5	2.0
Mean, " " " "	195	36	2.5	2.5	2.5
Total run-off in acre feet	8,946	2,156	153	151	92

*Gage rod located in N. W. ¼ of N. E. ¼, Sec. 21, T. [illegible] R. 72.

The stream is separated into two sections by a canon 1½ miles long in Secs. 28 and 21, T. 32 N., R. 73. Natural Bridge is in N. E. ¼ of N. W. ¼, Sec. 21, T. 32 N., R. 73.

Scale of map, 1 inch = 1 mile.

Total measured volume of water which ran to waste, 11,468 acre feet.

The total volume of water lost from this stream, if stored and used, would reclaim three times the acreage now irrigated.

DITCH SURVEYS, DISTRICT 13, DIVISION No. 1.

Report of Wm. M. GILCREST, Assistant Engineer.

Consequent upon the action of the Board of Control, at its meeting on the 19th day of March, 1897, ordering an adjudication of the water rights on Elk Horn, Indian, La Bonte, Wagon Hound, Bed Tick, La Prele, Box Elder, and Deer creeks, all tributaries of the North Platte river, in Water Division No. 1, surveys of all the ditches on said streams were made in the season of 1897. Following is a report of the work:

ELK HORN.

Work was commenced on the 13th day of May. Elk Horn is a small stream, having its source in the open foothills of the Laramie Peak range. Its course is through an open rolling country devoid of timber; it has comparatively little brush and few trees along its banks, and flowing, as it does, over a very sandy bed, the spring supply of water is soon gone. Its average flow is absorbed in the sandy bed through which it flows, only appearing at the surface at two or three points, where it runs for a short distance, when it is again lost in a long exposed bed of sand. There are but three ranches on the main creek, located at three points where the formation acts as a subdam to bring the underflow to the surface. Owing to this feature of the stream there should be no conflict among the several appropriators over their respective water rights, as its use by one can in no way injuriously affect the others.

The land along this stream is of an excellent quality, yielding fine crops.

No special examination for reservoir sites was made, but it is believed that facilities for storage exist, and, if resorted to, a very much larger area of land could be reclaimed and made productive.

Ten ditches were surveyed, having a total length of seven miles; they were uniformly found to be in fair condition.

LA BONTE.

La Bonte is one of the important streams of this region. Its fine bottom lands of rich, sandy loam, upon which, owing to the low banks and rapid fall of the stream, it is easy to divert the water, together with the extensive grazing country on either side, early attracted settlers along its course. The well constructed ranch houses and commodious barns speak as well of the thrift and industry of the settlers as they demonstrate that farming in this state, of the character followed on this and the other streams, can be carried on successfully and profitably. The source of the stream is in the Laramie Peak range, the sides and slopes of which are very steep and rocky and, being but sparsely covered with timber, permit the snow to quickly melt and run off, comparatively little of the water being stored naturally. Special care should be exercised to protect and preserve what timber exists and steps taken to foster its growth as a means of holding the snow falls and thus increasing and prolonging the water supply. The stream leaves the mountains at a point about twelve or thirteen miles above its mouth and irrigation on the main stream is confined to this part. The waters of its four small tributaries are fully utilized by the existing appropriators on each. The main stream, before it emerges from the mountains, passes through some very narrow canons or gorges where storage reservoirs might be constructed to hold the waste waters. There is enough unused land along the stream to warrant a considerable outlay in this direction.

The two gagings made during the progress of the survey illustrate the conditions existing at its sources and emphasize the necessity or advantage of storage. On May 15th a measurement was made below all diversions but one, which showed a discharge of 211 cubic feet per second, while on the 30th of the same month, at the same place, it showed a discharge of but 48 cubic feet, and save for one or two short rises occasioned by heavy rains the latter gaging represented more than the normal discharge of the stream through the irrigation season.

Sixty-one ditches were surveyed, having a total length of fifty-five miles.

WAGON HOUND.

The survey of Wagon Hound followed that of La Bonte, and was begun on tne 9th day of June and finished on the 16th. The stream heads in the same range of mountains as La Bonte and the same conditions obtain as regards its flow, except that for the greater part of its course the fall is much less and the water does not, therefore, so quickly run off. The natural flow is also much aided and prolonged by the fact that at two or three points the stream is crossed by vertical ridges of solid rock which, acting as subdams, store and bring the underflow to the surface at these points.

The ranch improvements on this stream are noticeable for their substantial character and modern appearance.

While stock raising is the principal industry of the settlers, the comparative nearness of the stream to Douglas has led some of them to pay considerable attention to the raising of vegetables and farm produce and the ready sale and prices obtained have well repaid the venture.

The average flow of this stream is believed to be now fully utilized by the existing settlers, most of whom, however, could advantageously use a larger quantity of water if obtainable. This could be provided by utilizing a large natural basin near the middle upper half of the stream. The surplus spring waters could be turned into it through a canal, the building of which would not occupy much time and presents no physical difficulties of construction.

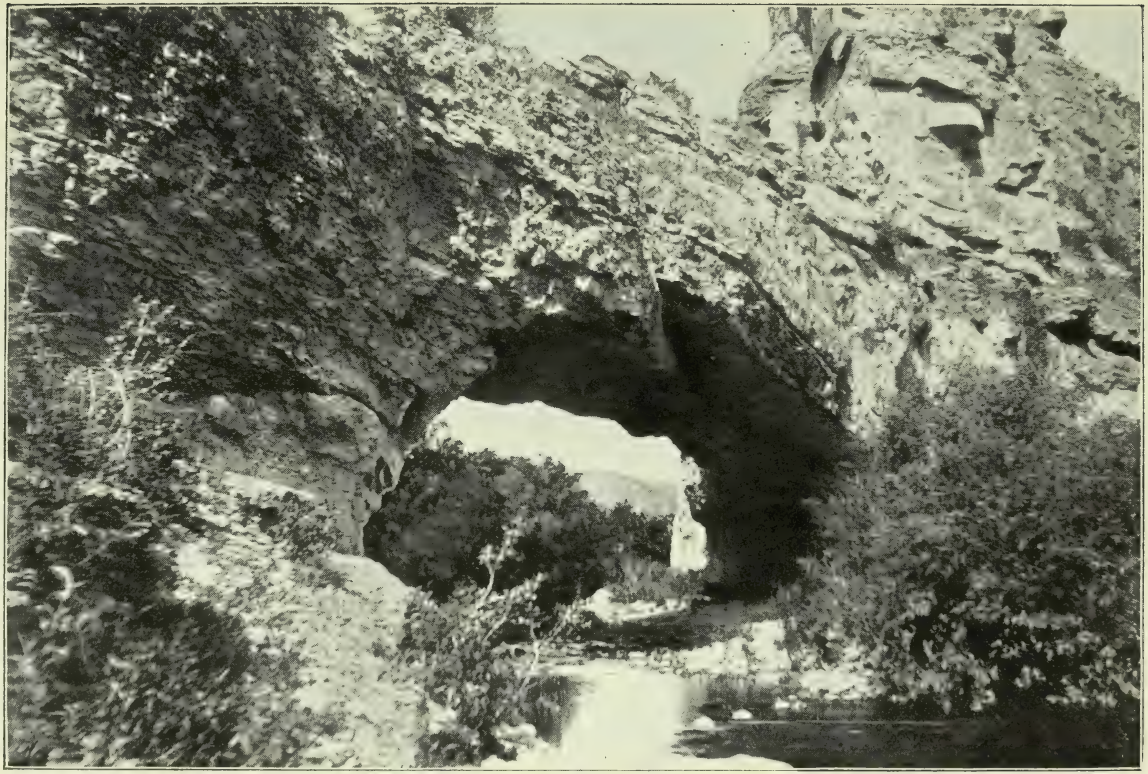
Nineteen ditches, having a total length of twenty miles, were surveyed.

LA PRELE.

Applications for permits for large appropriations of water from this stream have been made to this office, by which it is proposed to divert the same from the natural drainage for use upon land lying in a different water-shed. Objections and protests have also been filed against the granting of the same. As the office had no record of the flow of this creek it was decided to establish a permanent gaging station on the lower part of the creek and keep a record of its daily flow through the season. Accordingly a measurement was made at a point near the railroad bridge and a permanent rod was set a short distance above, an observer being employed to take daily readings of the same, the record of which will be found under the head of stream gagings.

This stream rises in the same mountain range as the previous ones and is subject to the same conditions as to flow. The measurements of its discharge shows a very large amount of water in excess of needs running to waste in May, and rapidly falling to a low stage in June. Were it not for the fact that the porous nature of the soil upon which the water is used for irrigation permits of a large percentage being returned quickly to the stream, there would be a serious shortage of water for the present appropriators after the middle of the irrigation season. Ditches were observed which by means of a small dam across the stream diverted its entire surface flow, while the next ditch, not over a half mile below, would be found to be carrying water almost to its full capacity derived from the underflow of the stream and return seepage of the ditch above; this condition holds good at almost all points along the stream.

Agriculture as an aid to stock raising is the incentive to irrigation on this stream, which from the condition and appearance of the ranches and their improvements, seems to be successful and profitable.



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NATURAL BRIDGE, LA PRELE CREEK.

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Sixty-two ditches, having a total length of sixty-two miles, were surveyed.

BOX ELDER.

This stream has the largest area of irrigated land of any of those surveyed during the season, over 4,000 acres being reclaimed.

The ditches were found to be in good condition and well cared for. Box Elder appears to sustain its flow much later in the irrigation season than any of the other streams surveyed, which is probably due largely to the geological structure of the country it crosses. The stream is separated by deep and precipitous canons into four distinct sections or basins, which, as regards the use of water, are practically independent of each other. Their valleys or basins being not very wide and gradually narrowing toward the rocky barriers through which the stream has cut its way over a solid rock bed, have a tendency to collect the sub-waters and seepage and start the stream afresh at each of the canons. The use of water in these basins toward the head of the stream by irrigators has proven to be a benefit to users of water below, acting as storage and prolonging the flow of water later in the irrigation season.

On the lower part of the stream the average available flow has been very largely increased since the multiplying of ditches along the upper part of the stream. This stream, like all the others, has a very large area of unreclaimed land which can only be brought under cultivation by resorting to storage, facilities for which are to be found on the upper part of the stream.

Eighty ditches were surveyed, having a total length of seventy-five miles.

DEER CREEK.

The survey of this stream completed the field work for the season of 1897, work being commenced on August 24th and finished on September 7th.

Deer Creek rises in the range of mountains of the same name and, running nearly north throughout its course, enters the Platte at Glenrock. After emerging from the high mountains it passes through what is known as Deer Creek Park, which is a high, open rolling country lying just back of the foot-hill range. There is but little irrigable land on this part of the main stream, only one ranch being located on it. There is, however, considerable good land on the West Fork and its tributary, King's Branch, the natural water supply of which, however, is insufficient for its entire reclamation.

After leaving the Park the stream flows through a long, very deep and rocky canon with precipitous walls; the point where it leaves the canon being about twelve miles above its mouth nearly all the irrigation is confined to this part of the stream, and there is a very great extent of fine irrigable land along it for the reclamation of which the present unaided flow of the stream is insufficient. A very considerable portion of this land is already covered by two large canals built several years ago, one of which has never been used at all, and the other but in a very limited way from the main stream, the present water supply of the stream being insufficient to fill the ditches during the height of the irrigation season.

Twenty-three ditches were surveyed, having a total length of 41.75 miles.

COTTONWOOD CREEK.

This stream has its source on the south-westerly slope of Laramie Peak, in Albany County, flowing around the southern base of the Peak to the eastern side, thence runs east to its junction with the North Platte river.

The stream is divided by natural features into three separate parts, as regards its utilization for irrigation purposes—each practically independent of the other so far as the use of the water is concerned.

The upper part of the stream, after leaving the steep slope of the mountain, flows through an open park in which are located four ranches, which embrace all of the available cultivated ground on this part of the stream and require all of the water after the middle of the irrigation season.

After leaving this park the stream is confined to a narrow, rocky canon for six or seven miles, emerging into a small valley in which are situated but two farms, the two practically occupying all the available land on this part of the stream.

Again entering a narrow canon, the stream is confined for a distance of five or six miles and flows thence over a broad, sandy bed for about six miles, there being but one ranch on this part of the creek. Although there is much good land along it, it cannot now be utilized, owing to the fact that except during the heavy spring floods this part of the stream is totally dry. Water rises in the creek below this stretch near the line between Townships 68 and 69 and with the exception of a stretch of about two miles just above Badger station continues to flow more or less during the irrigation season.

It is apparent, however, from an examination of the stream that the present natural flow is insufficient for the proper irrigation of all the existing ranches on the lower part of it, and there is a very large quantity of excellent agricultural land not under irrigation.

The natural supply of water, however, can be increased to a sufficient amount for all purposes by resorting to storage, splendid facilities for which exist on the middle upper part of the stream and which can be utilized at a very reasonable cost.

RECORD OF DITCH MEASUREMENTS.

La Bonte Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	Remarks
			Width	Depth	Grade		
Road Ranch No. 1	Pollard & Co.	La Bonte	7.6	2	10		Ditch well constructed as far as used.
" " No. 2	" "	"	6.5	2	15		At 2,600 feet from headgate ditch is washed out; not used below this point; used above by Schofield.
Deerhead	Wm. Schofield and M. Gross	"	5.5	1	4		In good condition.
Guthrie	S. A. Guthrie and F. George	Guthrie	6	2	4		Not completed to George's land; used on a few acres by Guthrie.
Kern	John Kern	La Bonte	4	1.5	2.25		In good condition; part of water taken across La Bonte by inverted siphon.
La Bonte Canon	W. S. Hamilton	Spring Hill	5	1		*5.98	Ditch in good condition.
West Side	Taylor Patterson	Guthrie	6	1.5	5		Ditch in good condition. Headgate at dam, 10 ft. high; rock-filled log cribs
East Side	" "	"	7	1.5	4		
Goodwin No. 1	Geo. T. Goodwin	"				*5.40	Ditch in good condition. Heads at dam of rock-filled log cribs, 6 ft. high
" No. 2	" "	"	4	1	5		Heads at dam of logs and rock; partly washed out.

* Gaged.

RECORD OF DITCH MEASUREMENTS, *Continued— La Bonte Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Cole No. 1	Dwight H. Cole	La Bonte	3.5	2	5		Constructed 5 years. No permit.
Darlington	Henry B. Freeman, S. A. Guthrie, Ag't	"	7	1.5	5		Main ditch in good condition; right-hand branch badly constructed; left-hand branch not used beyond 3,487 feet from forks; flumes destroyed. No irrigation under it.
WEST FORK LA BONTE CREEK.							
Wagon Hound D. Co. No. 1	S. A. & W. E. Guthrie	Guthrie	5.5	2		*18.81	In good condition.
Guthrie West Fork Ditch	" " "	"	4	1	10		Utilizes seepage and surplus water from No. 1, in addition to supply from stream.
Canon	Antone Loubere	"	2	.9		3.5	Measured at flume, full capacity. In good condition.
Red Glade	Robert Gordon	Glendo	6	1	10		Not completed. In use at upper end only.
Table	" "	"	4.5	1	40		
Garden	" "	"	2	.7	10		Irrigates two or three acres of garden.

* Gaged.

RECORD OF DITCH MEASUREMENTS—*Continued.*

OWL CREEK—Tributary of La Bonte.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Willox No. 1	James Willox	Guthrie	3	.9	22		
" No. 2	" "	"	3	1	23		
" No. 3	" "	"	3	.8	35		
" No. 4	" "	"	2	.8	20		
" No. 5	" "	"	3	1		*6.48	Measured at flume, full capacity.
" No. 6	" "	"					Not in good condition. Irrigates small patch of alfalfa.
Garden	" "	"	1.5	1	1		Irrigates small garden patch.
Cooper	Lyman B. Cooper	"	4.5	1.5	10		Well constructed; in good repair. No permit.

INDIAN OR WILSON CREEK—Tributary of La Bonte.

Indian Creek Water Ditch	W. S. Hamilton	Spring Hill	3	.7	15'		No irrigation; not used for several years
Foxton No. 1	George Foxton	" "	2.5	.8	15		Ditch in good condition.
" No. 2	" "	" "	2.5	.8	15		In addition to supply from stream utilizes surplus and seepage of No. 1.
" No. 3	" "	" "	2.5	.5	15		In addition to supply from stream utilizes surplus and seepage of No. 2.
" No. 4	" "	" "	3	.7	15		In addition to supply from stream utilizes surplus and seepage of No. 3.
H. Foxton No. 1	Henry H. Foxton	" "	3	.7	10'		

* Gaged.

RECORD OF DITCH MEASUREMENTS—*Continued.*

REID CREEK—Tributary of La Bonte.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Reid No. 1	Rutherford Bros.	Spring Hill	6	1	28		Ditch also takes water from East Fork Reid Creek where crossed.
" No. 2	" "	" "	4	1	10′		
" No. 3	" "	" "	3	.8	6		
" No. 4	" "	" "	4	1	6		
Morrison No. 1	A. C. Morrison	" "	3.5	.7	10		No permit. Good condition.
" No. 2	" "	" "	3	.7	7		" " " "
" No. 3	" "	" "	2.5	.7	7		" " " "

MILL CREEK—Tributary of La Bonte.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Foxton No. 1	John Foxton	Spring Hill	2.5	.6		*2.7	Measured at flume, full capacity. Irrigates pasture.
" No. 2	" "	" "	3	.8	10′		
" No. 3	" "	" "	3	.8	10		Also receives supply from spring.
" No. 4	" "	" "	4	1	10		Not completed beyond 3,000 feet.
H. Foxton No. 1	Henry H. Foxton	" "	4	1	7		
" " No. 2	" "	" "	3	1	7		
Callais	Joseph Callais	" "	4.5	1	7		Good condition.
Reservoir Ditch	" "	" "	1	.5	15		Fills small reservoir to augment supply in Callais Ditch.

*Gaged.

RECORD OF DITCH MEASUREMENTS—*Continued.*

TRAIL CREEK—Tributary of La Bonte.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Trail Creek Ditch	Fred George	Guthrie					Washed out at head; out of repair: not used.

ELKHORN CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Foxton No. 1	F. A. Foxton	Glendo	3	1	30		
" No. 2	" "	"	2.5	1.3	23		
" No. 3	" "	"	2.5	1	11		Stream sinks below head of this ditch.
Elkhorn No. 1	John Moran	"	6	1	6	*3.38	In good condition.
" No. 2	" "	"	3.5	.8	26		
" No. 3	" "	"	3.5	1	26	* .63	Ditch not in use to full capacity.
Canda	James Canda	"	4	1	7	* .44	" " " " " " "
Hagge	——— Hagge	"	3.5	1	8		Ditch not completed. No irrigation.

NORTH ELKHORN CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Weaklen	Richard Weaklen	Glendo	3	1	10		Good condition.

* Gaged.

RECORD OF DITCH MEASUREMENTS—*Continued.*

WAGON HOUND CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Wagon Hound Ditch No. 3	S. A. Guthrie	Guthrie	4	1	12		In good condition.
Wagon Hound D. Co. No. 3	S. A. & W. E. Guthrie	"	5.5	1.5	5		" " "
Russell No. 1	John B. and Libby S. Russell	Douglas	6	1.5	6		" " "
" No. 2	John B. Russell	"	3.5	1	5		
Guthrie Homestead	S. A. Guthrie	Guthrie	4.5	.8	7		Heads at a rock-filled dam, 6 feet high
Buckeye No. 1	W. J. Carothers	Douglas	7	1	4		Ditch in good condition; is siphoned across creek and irrigates both sides.
" No. 2	" "	"	4	1	3		Ditch in good condition.
Albion	John W. Marsden	"	4	1	3		" " " "
Libby	" " "	"	5	1	9		Ditch in good condition. A lateral is siphoned across creek.
Westwick No. 1	Pat McCuen	"	7	1	6		Heads at brush and rock dam, 7 feet high. Ditch crosses creek and irrigates both sides.
Robbins No. 1	J. C. Gemmel and G. Fitzhugh	"	7	1	3		In good condition.
" No. 2	J. C. Gemmel	"	4	1	4		
Peterson & Johnson	P. Peterson and O. P. Johnson	"	4	.8	10		In good condition.
Johnson	O. P. Johnson	"	4	1	5		" " "
Westwick	P. Peterson	"	4.5	1	5		" " "

RECORD OF DITCH MEASUREMENTS—*Continued.*

GUTHRIE CREEK—Tributary of Wagon Hound.

NAME OF STREAM	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Wagon Hound No. 4	S. A. Guthrie	Guthrie	3	.8	20		
LATHAM CREEK—Tributary of Wagon Hound.							
Wagon Hound D. Co. No. 2	S. A. Guthrie	Guthrie	4.5	1	20′		Wagon Hound Ditch No. 3 and this one unite and then irrigate additional land to that watered by each separately.
LA PRELE CREEK.							
Military	Louis Metz	Douglas	3.5	.7	10′		Taken out and used by military authorities at Ft. Fetterman, and afterwards abandoned for several years.
Fetterman	Chas. Williams and D. VanValkenburgh	"	4	.8		*6	Measured at flume across creek.
Clelland Extension	D. Van Valkenburgh	"	4	1	6		Good condition. Branch of above ditch. Crosses creek and irrigates east side.

* Gaged.

RECORD OF DITCH MEASUREMENTS, *Continued—La Prele Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Freyer	R. Freyer	Douglas	1.2	.5		*.72	Not full capacity. Measured at flume.
Powell & Wheelock	Geo. and Bert Elder, W. H. Powell and B. C. Wheelock	"	2	4		2.4	Measured at flume on Bert Elder's land. Not full capacity. At headgate, 5 ft. wide, 1.50 ft. deep, grade 5′ per mile.
O'Brien, Wallace & Elder	J. D. O'Brien, E. Wallace, B. Elder	"	5.5	1.5	5		Good condition.
Bishop	Spencer A. Bishop	"	3.5	1	4		Heads at loose rock dam 3 feet high. Good condition.
Tobin & O'Brien	Pat Tobin and Thomas O'Brien	"	5	1	5		Good condition.
Brooks Extension Table Mountain	O. D. Brooks, W. E. and W. O. Brooks, Spencer A. Bishop and H. W. Kellogg	"	7	1.5	2	*7.68	Measured at flume. Dimensions are at headgate. Good condition.
Ayers & Powell	A. W. Ayers and J. W. Powell	"	5.5	.9	2.5		Good condition.
Powell	Geo. Powell, P. Brenning, A. W. Ayers	"	8.5	2	4		Not in use at time of survey. Tunnel caved in.
Powell No. 1	Geo. Powell	"	5	1	5		
Smith	E. C. Smith Estate	"	4.5	1	5		Good condition.

* Gaged.

RECORD OF DITCH MEASUREMENTS, *Continued—La Prele Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Arrowsmith No. 1	H. P. Allen and Fred W. Curtis	Beaver	3	1	2.5		In good condition.
" No. 2	H. P. Allen and Fred W. Curtis	"	3	1	10		
Curtis	Fred W. Curtis	"	3	1	6		
George	Peter and Chas. George	"	4.5	7	6		Good condition.
La Prele Ditch Co. No. 1	Joseph H. Kennedy	"	3.5	1.1		*3.85	Measured at headgate—not full capacity. Good condition.
Kennedy	" " "	"	3	1	3		Heads at loose rock dam, 4 feet high.
Crazy Horse	J. H. Kennedy, D. Leman, Chas. Horr	"	5	1	6		Good condition.
Moss Agate	Chas. Horr	"	3	1	6		" "
Hermit Rock Valley	Geo. H. Crass	"	6	1.5	3′		Dimensions taken at upper end; lower half of ditch almost level.
Jones	John Jones	"	6.5	1	6		Ditch enlarged and extended by Geo. H. Crass; not completed at time of survey.
Cross Two Ditch	" "	"	3.5	1	8		Good condition.
Jones No. 1	John Jones and Chas. Horr	"	3	1	5		
Crazy Horse	Frank Gore	"	3	1	5		Good condition.
Housiaux	John Housiaux, Chas. Howard, F. King	"	5	14 in	4′		Good condition. King uses ditch; has no interest in it and no permit.

* Gaged.

RECORD OF DITCH MEASUREMENTS, *Continued—La Prele Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
P. Housiaux	Philip Housiaux	Beaver					Ditch all washed away; not used for years.
Fritz	Andrew Jackson	"	3.5	1	6		Ditch enlarged and extended by Frank Curtis. Extension not completed; no irrigation by him.
High Line	George I. Lambe	"	5.5	1.5	8		Lower part of ditch 3 ft. grade. Ditch all newly constructed; said to have taken place of old ditch belonging to Geo. H. Cross.
Lambe No. 1	" " "	"	4	1	10		Is dropped into Dry La Prele and taken out lower down in an extension of this ditch.
" No. 2	" " "	"	4	1	8		Good condition; irrigates a fine young orchard.

DEADWOOD CREEK—Tributary of La Prele.

La Prele Ditch Co. No. 2	Joseph H. Kennedy	Beaver	4	1	6		Not in good repair; lower half not in use.
Proctor	Chas. Horr	"	3.5	.8	6		
" No. 2	" "	"	2	.6	5		
" No. 1	" "	"	1	.5	8		
Seepage	" "	"	1	.5			Utilizes seepage from Proctor Ditch.

RECORD OF DITCH MEASUREMENTS—*Continued.*

BUCKSHOT CREEK—Tributary of La Prele.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Buckshot No. 1	S. Slaymaker	Beaver	1	.6			Grade irregular; natural slope of land
" No. 2	" "	"	2	.7			" "
" No. 3	" "	"	2.5	.8			" "

BEAVER CREEK—Tributary of La Prele.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Rice No. 2	Charles Rice	Beaver	3	1	6		Good condition.
" No. 3	" "	"	2.5	.7	5		" "
Leman & Rice No. 1	" "	"	3.5	14 in	7		Well constructed and in perfect condition.
Howard No. 1	Wm. Howard	"	3	1	6		
" No. 2	" "	"	2	.6	3		
Bunn	Emerson Bunn	"	3	1	8		
Leman No. 1	D. W. Leman	"	4	1	6		Good condition.
Supply	" "	"	3	1	5		In addition to supply from stream, catches seepage from No. 1, and returns it to portion of same land.
Garden	" "	"	3	1	4		Formerly taken out on opposite side of stream; was washed out and then changed.

RECORD OF DITCH MEASUREMENTS—*Continued.*

SPRING—Tributory to Beaver Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Grade	Depth	Width		
Spring	Chas. Rice	Beaver	1	.5	3		Heads at small spring; fills reservoir and trout pond; also used to irrigate garden.
SPRING—Tributory to Beaver Creek.							
Spring No. 1	Wm. Howard	Beaver	2	1	3		Fills fish pond; also used for irrigation
" No. 2	" "	"	2	.8	3		Filled from same spring.
DOGIE CREEK—Tributary of Beaver.							
Dogie	Wm. Howard	Beaver	2	.5	3		No headgate—no permit.
RED CANON CREEK—Tributary of La Prele.							
Howard No. 1	Hannah Howard	Beaver	3	.8	6		Very little irrigation under this ditch for several years.
" No. 2	" "	"	2.5	1	6		Takes all the water in the creek.
" No. 3	" "	"	3	.8	3		Utilizes seepage and underflow.
South Red Canon No. 2	Geo. H. Cross	"	4	1	5		Good condition.
South Red Canon, No. 1	" " "	"	4	1	5		" "

RECORD OF DITCH MEASUREMENTS—*Continued.*

MOSS AGATE CREEK—Tributary of La Prele.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Moss Agate	Geo. Le Vasseur	Beaver	1.5	.5			No irrigation—this stream is all taken into the Hermit Rock Valley Ditch.

BLUE NOSE CREEK—Tributary of La Prele.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity	REMARKS
Brockway	Geo. I. Lambe	Beaver	2.5	.8	30		

LITTLE LA PRELE CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity	REMARKS
Brockway	Geo. I. Lambe	Beaver	2.5	.8	20		
" No. 2	" " "	"	1	1	20		

BOX ELDER CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity	REMARKS
Kimball No. 1	W. C. Kimball	Box Elder	2	.7	5		Good condition.
" No. 2	" "	" "	3.5	1	6′		" "
Box Elder No. 1	W. B. Wood and H. A. Bartshe	" "	5	1	12		Good condition. Used to full capacity
" " No. 2	W. B. Wood	" "	4	1	3		" "
Brown No. 1	A. H. Brown	" "	4.5	1	3.5		Used on school section. In good condition.

RECORD OF DITCH MEASUREMENTS, *Continued—Box Elder Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Brown No. 2	A. H. Brown	Box Elder	4	1	7		Used on school section.
Smith, White & Smith	Ed. Smith, Chas. Smith, W. H. White	" "	6	14 in	5		
Smith, White & Johnson	Ed. Smith, Charles Smith, W. H. White and L. P. Johnson	" "	5.5	1.5	5		Extended by Johnson since adoption of State law. No permit.
Kimball	E. H. Kimball	Glenrock	5.5	1.5			No fall to part of ditch; levels on 2,120 feet of ditch give rise of .8 of a foot. Except in high water Root Creek furnishes the only supply.
Macy	Chas. R. Macy & Co.	"	4	1	5		
Island	" " " "	"	2.5	1			Ditch on an island; scarcely any fall.
Macy No. 4	" " " "	"	3	1	4		
Carey No. 2	J. M. and R. D. Carey	Cheyenne	12	3	2.5		Ditch well constructed. In good condition.
Carey No. 4	" " " "	"	7	3	3		Ditch well constructed. In good condition.
" No. 1	" " " "	"	9	1.5	3		Ditch well constructed. In good condition.
Carey Slichter	" " " "	"					
Carey No. 3	" " " "	"	5	2	10		Ditch well constructed. In good condition.

RECORD OF DITCH MEASUREMENTS, *Continued—Box Elder Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Clayton	Thomas C. Clayton	Careyhurst.	4	1	3		
Slichter	John Slichter	Inez	12	2	4		Last ditch on creek. Except in high stage of water, supply insufficient to fill ditch.

SPRING CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Sullivan No. 1	Wm. Sullivan	Box Elder	2.5	1	7		Ditch in good condition.
" No. 2	" "	" "	2.5	1	7		" " "
" No. 3	" "	" "	3	1	5		" " "
" No. 4	" "	" "	3	1	5		" " "

GROUSE CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Grouse Creek	W. C. Kimball	Box Elder	2.5	.6	4		

ASPEN CREEK—Tributary of Snow Shoe.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Aspen	U. S. Grant	Box Elder	1.5	.5			

NIGGER GULCH—Tributary of Snow Shoe.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Nigger Gulch	U. S. Grant	Box Elder	1.5	.5			

RECORD OF DITCH MEASUREMENTS—*Continued.*

SNOW SHOE CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Grade	Depth	Width		
Snow Shoe No. 1	U. S. Grant	Box Elder	3	1	12		
" " No. 2	" "	" "	3	1	15		
GRASS CREEK—Tributary of Twin Creek.							
Grass	U. S. Grant	Box Elder	1.5	.5			Grade of ditch natural slope of land.
Hay	" "	" "	1.5	.5	6		
TWIN CREEK—Tributary of Virden Creek.							
Twin Creek No. 1	U. S. Grant	Box Elder	2	.8			Grade irregular.
" " No. 2	" "	" "	2	.8			" "
BUCK CREEK—Tributary of Box Elder.							
Buck Creek	U. S. Grant	Box Elder	4	1	12		
STRAWBERRY CREEK—Tributary of Virden Creek.							
Strawberry No. 1	F. H. Virden	Box Elder	2	.5	10		
" No. 2	" "	" "	2.5	.6	10		

RECORD OF DITCH MEASUREMENTS—*Continued.*

VIRDEN CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Virden No. 1	F. H. Virden	Box Elder	2.5	.8			Ditch in good condition.
" No. 2	" "	" "	3	.9	5		" " "
" No. 3	" "	" "	4	1	15		" " "
" No. 4	" "	" "	2.5	.6			Irregular grade.
" No. 5	" "	" "	2.5	.8			" "
Smith No. 1	Marton Smith	" "	3.5	1			Grade irregular.
" No. 2	" "	" "	3.5	1	4		
Virden Creek No. 1	W. B. Wood	" "	4	1	10		Ditch in good condition.
" " No. 2	" "	" "	4	1	10		

WOOD'S CREEK—Tributary of Box Elder Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Wood	W. B. Wood	Box Elder	2	.8			Irregular grade.

LINDGREN SPRING CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions Width	Dimensions Depth	Dimensions Grade	Capacity Cubic feet per second	REMARKS
Lindgren	Samuel P. Lindgren	Box Elder	2	.8			Irregular fall.
Johnson No. 1	L. P. Johnson	" "	3	.6			Ditch built by Kennedy & Baker and abandoned for several years. Rebuilt and extended by Johnson to land not formerly irrigated.

RECORD OF DITCH MEASUREMENTS—*Continued.*

WILLOW, OR CANNON CREEK—Tributary of Box Elder Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Grade	Depth	Width		
Grimes No. 1	W. E. Grimes	Box Elder	3.5	1	7		Good condition.
" No. 2	" "	" "	3	1	5		" "
Cannon No. 1	W. H. Thayer	Glenrock	3	.8	12		
" No. 2	" "	"	3	1	5		
" No. 3	" "	"	2.5	.9			Irregular fall.
" No. 4	" "	"	3	.9			" "

SCHOOL CREEK—Tributary of Box Elder Creek.

School	Ed. Smith	Box Elder	1.5	.5	15		

ROOT CREEK—Tributary of Box Elder Creek.

Root No. 1	G. H. Root Estate	Glenrock					The Kimball Ditch has been constructed upon the same line as this one; size not ascertainable.
" No. 2	" " "	"					Has not been used for 2 or 3 years.

COUNT'S SPRING—Tributary of Box Elder.

Corrao No. 1	Adolph Corrao	Glenrock	2	.6			

RECORD OF DITCH MEASUREMENTS—*Continued.*

HUNTON CREEK—Tributary of Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Hunton Canon No. 1	W. H. Thayer	Glenrock	3.5	1	5		In good condition. Also takes water from West Fork Hunton Cr. where it crosses.
" " No. 2	" "	"	2	1	5		Good condition.
" " No. 3	" "	"	4	14 in	4		" "
Branch No. 1	" "	"	3	1			Irregular grade.
Macy No. 1	Chas. R. Macy & Co.	"	4	2	6		After half-mile ditch follows natural channel; leaves dramage of Hunton Cr. and irrigates land on Box Elder.
Earle	Geo. P. Clayton	"					Ditch unfinished. No irrigation.
Seepage	" "	"	3	.8			" " " "
Vernon	" "	"					In course of construction. No irrigation.
Guard	" "	"	3	.8			Ditch partly finished. Water runs through ditch and back into creek. No beneficial use of same.
Quarry	Alice Clayton	Careyhurst	4	1	3		Good condition.

WEST FORK HUNTON CREEK—Tributary of Hunton Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
West Fork Supply	W. H. Thayer	Glenrock	2	.8			Ditch returns seepage and underflow from Hunton Canon No. 1 to part of same land covered by No. 1.

RECORD OF DITCH MEASUREMENTS—*Continued.*

BATTS CREEK—Tributary of Hunton Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Batts Canon	W. H. Thayer	Glenrock	4	1	4		
Garden	Geo. P. Clayton	"	1	.8	6		Irrigates small garden patch.

LITTLE BOX ELDER CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Carey Little Box Elder	J. M. & R. D. Carey	Cheyenne	4.5	1.5	8		Well constructed. Good condition.
Conwell No. 1	M. I. Conwell	Careyhurst	4	1	7		
Seepage	" "	"					Utilizes seepage and overflow from "E. S." Ditch.
Conwell No. 2	" "	"	3	1	3		
"E. S." No. 1	Benjamin & Weaver Cattle Co.	Cheyenne	3	1	4		
" No. 2	Benjamin & Weaver Cattle Co.	"	3	1			
McCrossin No. 1	F. G. McCrossin	Careyhurst	4	1	3		Originally built and used by Benjamin & Weaver Cattle Co.
Wood	James Abney	"	5	1	2		

SPRING—Tributary to Little Box Elder Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
McCrossin No. 2	F. G. McCrossin	Careyhurst	4.5	1	5		Originally built by Benjamin & Weaver Cattle Co.

RECORD OF DITCH MEASUREMENTS—*Continued.*

COTTONWOOD CREEK—Tributary of Little Box Elder.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Wood	James Abney	Careyhurst	4	1	10		Not used for several years; washed out at headgate.

DEER CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Tolland Co. Canal No. 1	Tolland Co	Glenrock	7	1.5	3		No water being used from Deer Creek. All water used being taken from Little Deer Creek where the ditch crosses it. Total length 16 miles.
Tolland Co. Canal No. 2	" "	"	7	2	3.5		Originally well constructed, but much brush growing in ditch. Capacity sufficient if cleaned out.
Tolland Co. Canal No. 5	" "	"	12	2	4		Canal never used beneficially; entirely destroyed at point 6,700 feet from headgate. Total length about 12 m.
Mortimore	Silas Mortimore	"	5	1	3		Ditch dry; being cleaned out and reconstructed.
Arnold	G. H. Arnold	"	4	1	5		
J. Arnold	Jno. Arnold	"	3	1	5		

Record of Ditch Measurements, *Continued—Deer Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Grade	Depth	Width		
Hemingway	A. Hemingway	Glenrock					A cut of 50 feet turns water into old channel, which is used as a reservoir. Distributing ditch in good condition.
Little Supply	Briney, J. Summer, Slaughter and Tolland Co.	"	5.5	1	3		
Long	Tolland Co.	"	4	1	3		
Olsen & Heller	John Heller & P. Olsen	"	5	1	3.5		
Young, Olsen & Heller	N. Young, Jno. Heller and P. Olsen	"	4.5	1	3.5		Ditch in good condition.
Carey No. 1	Seymour & Blessing	"	5	1.5	4		Good condition.
Millar	Jno. Millar	"	4	1	2.5		
Davis No. 1	W. H. Davis	Box Elder	5	1	7		Good condition.

Little Deer Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Grade	Depth	Width	Capacity Cubic feet per second	REMARKS
Tolland Co. Canal No. 3	Tolland Co.	Glenrock	5	1.4	4		In good condition.
Tolland Co. Canal No. 4	" "	"	3	1	4		" " "

RECORD OF DITCH MEASUREMENTS—*Continued.*

WILLOW CREEK—Tributary of Deer Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
John No. 1	John John	Glenrock	1.5	.5			Grade irregular.
Denton No. 1	Mary A. Denton	"	1	.6			" "
Phillips No. 1	Isadore Phillips	"	1.5	.6	25		

KING'S BRANCH—Tributary of West Fork Deer Creek.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
King No. 1	Tom King	Casper	1.5	1	20		
" No. 2	" "	"	4	1	10		
" No. 3	" "	"	5	1	7		Ditch not completed. No irrigation.

WEST FORK DEER CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Width	Depth	Grade	Capacity Cubic feet per second	REMARKS
Harris No. 1	E. G. Harris	Casper	5	1	7		

RECORD OF DITCH MEASUREMENTS—*Continued.*

COTTONWOOD CREEK.

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Grade	Depth	Width		
Held	Edward Held	Binford	2	8 in.			Irregular fall. Constructed two years. No permit.
St. Dennis	Edward Held and —— Hopkins	"	3.5	1	10		
Center	John M. Rutherford	"	3	1	9		
Prager	" "	"	4	1	7		
Prager Extension	Joseph Rutherford	"	4	1	7		Not completed. No irrigation.
Binford No. 2	Geo. H. Binford	"	3.5	1	6		Good condition.
" No. 1	" "	"	4	1	6		" "
" No. 4	" "	"	4	1	5		Ditch not completed. No irrigation.
Shaw No. 3	Thomas Shaw and Geo. H. Binford	"	5.5	1	12		Main ditch crosses creek in flume; irrigates on both sides of creek. Binford claims appropriation through ditch.
" No. 2	Thomas Shaw and Geo. H. Binford	"	3	1	12		Good condition.
Hay	Peter McFarlane	Badger	6	1.5	3		
Sawyer	" "	"	4	1	5		
McCullough No. 1	H. C. McCullough	"	4	1	5		
" No. 2	" "	"	4	1	5		
Miller No. 1	Miller Bros.	"	3				Ditch not in use. No irrigation at present.
" No. 2	" "	"	3.5	1			Ditch not in use. No irrigation at present.

RECORD OF DITCH MEASUREMENTS, *Concluded—Cottonwood Creek.*

NAME OF DITCH	NAME OF APPROPRIATOR	Post Office	Dimensions			Capacity Cubic feet per second	REMARKS
			Width	Depth	Grade		
Hermann	Herman Bros.	Badger	4	1	12		
Ireland	Ireland	"	4	1	10		Very little water at headgate. Ranch unoccupied.
Grainger	Grainger	"	4	1	5		No water at headgate. No recent irrigation.
Bardell No. 1	Dr. Bardell	Longmont*	3.5	1	5		No water at headgate. Stream dry.
" No. 2	" "	"	2	10 in	2		
Wright No. 2	Geo. S. Adams	Badger	6	1			Irregular grade.
" No. 2	" "	"	5	1	6		
Cottonwood	Mrs. Geo. Neumann	"	5	1	8		Good condition.
Coleman	M. F. Coleman	"	2.5	.8	5		
Hubert	Catherine Reitz, M. F. Coleman and W. C. Fletcher	"	6	1	5		
Turpin No. 2	B. Turpin	Uva	3	1	6		No water at headgate. Stream dry.
" No. 1	" "	"	4	1	6		" " " " "
Kenny No. 1	Wm. Kenny	"	5	1	6		" " " " "
" No. 2	" "	"	3	1	5		" " " " "
Shaw	Thos. Shaw	Binford	4	1	6		Good condition.

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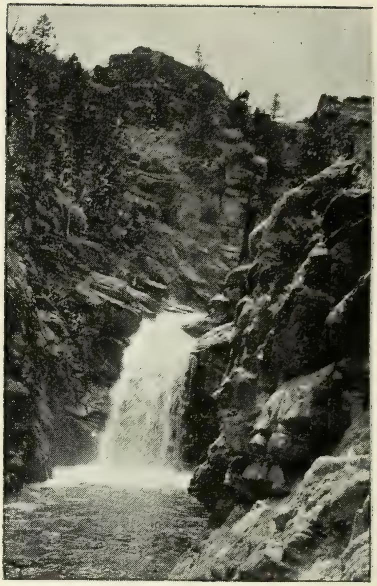
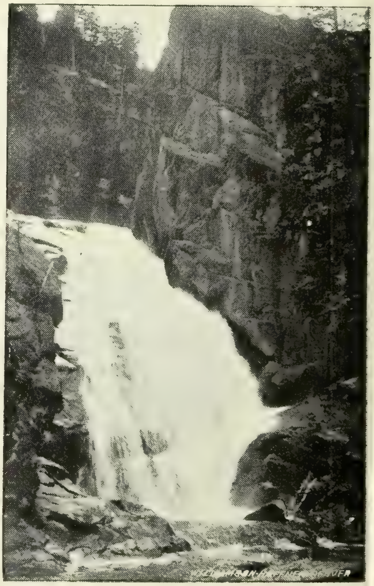


Fall on Big Goose Creek.

Fall on Big Goose Creek.



Fall on Big Goose Creek.

WATER POWER OF BIG HORN STREAMS.

STREAM GAGINGS.

INFLUENCE OF SEEPAGE, EVAPORATION AND GEOLOGIC STRUCTURE ON THE DISCHARGE OF STREAMS. RELATION OF THE LOCATION OF A WATER RIGHT TO ITS VALUE.

During the past two years C. T. Johnston, Assistant Engineer, has given the greater part of his time during each irrigation season to the gaging of streams and looking after the records of their discharge. This work was done for the hydrographic branch of the U. S. Geological Survey, which paid all the expenses but gave this office copies of the results.

In September of this year Mr. Johnston was employed by the Department of Agriculture in the study of some interstate water right questions in which Wyoming is concerned. The facts gained in this investigation have also increased our knowledge of the irrigation problems which must in time receive attention from Congress or the courts.

In addition to these measurements the office made some special investigations into the water supply of several streams, the results of which seem worthy of a place in this report.

Discussions of stream discharges and laws for acquiring rights therein seem to assume that the volume to be divided can be readily ascertained and that all those in charge of the stream have to do is to measure the flow and then apportion it among users in accordance with their priorities of right. Those who have charge of this division find this conception does not always agree with the facts. Of all the adjudicated streams in Wyoming I cannot think of one where gagings at one point, no matter what place is selected, will give the volume which can be utilized by irrigators. On many streams irrigators divert the entire flow. Where this is done we are able to locate the sources of supply and observe its fluctuations to much better advantage than before such diversions were made. In these studies we have found that subterranean waters are of much more importance than was formerly supposed. On some streams springs furnish the main supply; on others crevices in the rocks provide an avenue for large losses. Among the adjudicated streams of this state very few are like canals—simply a channel to transport what is turned in at the head; on the contrary, they gain and lose in every mile of their course. The inclination of the underlying strata often has more influence on a creek's flow than the area of its mountain water-shed. Some streams have a large volume where their channel cuts across a rock ledge, while in sandy basins above and below the visible supply will wholly or in large part disappear. Because of these fluctuations the location of a right is often of more importance than the number of its priority. In order to conserve the water supply and secure the most effective division of a creek or river these changes in the available volume have to be taken into account. They cannot be obtained from a gaging record secured at single station. What is needed is a careful study of physical conditions along the entire stream.

The experience of our water commissioners would furnish as many illustrations of the truth of these statements as there are rivers to divide. Only a few can be given. We will begin with Salt River, which waters about as many acres of land as any stream in the state and where the enforcing of rights is about as perplexing as can be imagined. Where this river leaves the mountains it has a perennial flow; so it has at the narrows twenty-five miles below; midway between these two points it goes dry every summer. The closing down of every ditch on the main stream, and on all its tributaries above this dry section, would not furnish water to appropriators along the portion where the water sinks. When I crossed the river near Fairview several years ago its channel was as dry as the streets of Cheyenne, while eleven miles below its volume was larger than that of the North Platte on the same date.

The North Platte is another, but less striking example. For many years a gaging station has been maintained at Orin Junction. It is an excellent location and the record is of value in view of possible inter-state complications, as the station is below all ditches of any size in Wyoming and the flow measured gives a close approximation of the surplus which remains for irrigators below. The volume taken out in Wyoming below the station is less than is received from Laramie river, so that when there is a thousand second-feet in the river at the station, there should be as much or more for Nebraska's irrigators at the state line. The facts are otherwise. Last July, when 900 second-feet was flowing past the gage rod at Orin, a hot and thirsty representative of Nebraska's irrigators protested against the stream being dried up by Wyoming ditches. He was correct about the river being dry. I crossed it on the Burlington railroad near Grand Island, and nothing but a succession of pools was left of the torrent which at that moment raged through the canon fifty miles west of the Wyoming state line. The water was gone, but it did not depart in ditches. It disappeared in the sand through which the stream winds its devious way. In September the discharge at the gaging station was about 500 second-feet. Not 100 second-feet of this was taken out between that point and the eastern boundary of the state, and the volume diverted was offset by what the Laramie supplied, yet before the border of Nebraska was reached the water had all disappeared. In less than 100 miles over 400 second-feet had gone into the air by evaporation or sunk into the sand by percolation. If instead of one station on the river there had been three, one at the Colorado-Wyoming boundary where the river enters the state, another at the Nebraska-Wyoming border where it leaves, and the one at Orin where its present diversion practically ends, the three records would have little resemblance to each other, while their differences would have no relation to the use of water by irrigators.

The loss of over 400 second-feet between Orin and the state line really occurs in half that distance. Gagings made at Fairbanks, fifty miles nearer Nebraska, show a greater discharge than at Orin. The causes of these fluctuations are not at all obscure. Less than a mile below Orin the river cuts across a rock ledge which brings the underflow to the surface. This permits nearly but not all to be measured. At Fairbanks a vertical marble dyke cuts across the valley. Every particle of water which gets past this has to flow through the narrow notch which the river has eroded. Whatever underflow escapes at Orin is in evidence here. At the state line the river has a broad, shallow bed, winding in and out among islands and sand bars, where every condition favors its rapid absorption, both into the air above and into the soil below.

The report of Mr. Gilcrest shows that the streams on which he surveyed the ditches in 1897 are divided into sections, which are, in a large measure, independent of each other so far as the enforcement of prior rights or the use of available supply is concerned.

The gaging station at the mouth of the La Prele, maintained by this office in 1897, showed how much water escaped, but it gave no indication of how or where it could have been used to the best advantage.

Horse Shoe, Cottonwood, Chugwater, Lodge Pole, Crow, and Lone Tree creeks are examples, in Laramie County, of streams which each year become dry, or almost so, in places, and have a perennial flow in other sections. There is little use in trying to enforce priorities of right across some of these dry stretches. The water required to saturate these basins of sand will, if used where it rises, save many acres of crops. The loss of over 400 second-feet in fifty miles of the North Platte is evidence of this. The truth is that each stream is, in a measure, a law to itself and conditions along one are no guide as to what they will be on another.

The rise of water in some sections of a stream and its disappearance in others creates some perplexing questions. Many of the earlier ditches were located before these facts were known and before the extent of the water supply was much thought of. As a result headgates were placed on sand bars where ten second-feet has to sink beneath the channel in order to keep one in sight. The loss in putting water in such ditches is, therefore, heavy, and other appropriators object to the waste, as they term it, which the enforcement of these rights involves. The members of the Board of Control hold different views regarding our duty in such cases. Some are of the opinion that, where the protection of a priority involves an excessive loss, the right should be ignored and the water be given to later appropriators who can use it to better advantage.

I do not believe we have such discretionary authority. The law gives the first user the better right. It left him free to locate his ditch where he pleased without regard to the abuses which this absence of direction or control might create. The right cannot, therefore, be disregarded without setting aside the whole theory of prior rights and violating the law creating them. I believe that so long as the law is in force these priorities should be recognized, unless it can be shown that there is not water enough in the stream to both supply the waste and use combined. If doing this involves a loss to others of such proportions as to make the existence of this right a public injury the law should be changed. Permanent relief will not come from disregarding statutes, but through their modification. Let a law be passed to condemn such wasteful rights, other appropriators to pay the costs incurred in proportion to the benefits received.

INFLUENCE OF SUBTERRANEAN WATERS.

In the adjudication of water rights, and in most court decisions affecting those rights, the stream disposed of is treated as though it all had come and was to come from one snow bank, or in other words, as if all the rights established were to be supplied from a single and common source.

Because of this premise it has been held that so long as the supply comes from the same source the place of diversion and use is immaterial and the holders of water rights should be permitted to shift their appropriations from one ditch to another and move their priorities up stream or down as interest or inclination may dictate. Those who uphold this doctrine appear to take it for granted that no matter where the original right was acquired the appropriator took from a supply which included all the water in the stream. The soundness of this doctrine depends, in a large measure, on whether it agrees with the facts. If all the water a stream carries enters above an appropriator's ditch the claim that the place of diversion is not material has much better foundation than it has where the greater part comes into it below.

It has never been held that the beneficial use of water from a particular source gives a right to water from a different one. The first appropriator from Crow Creek cannot transfer his priority to Lodge Pole and take the water away from the second priority there. Using water from the North Platte gives no right to Green River. So far as streams are concerned rights are restricted to the source from which originally acquired.

I can think of no reason why such limitation should not apply to rights from a single stream. If it does, then the man who builds a ditch at the head of a creek has no license to move his priority down stream in order to get control of an additional supply which his original ditch could not divert. An irrigator on the Laramie Plains, taking water from the Laramie River, has, in my opinion, no right whatever to Sybille Creek, even if it is a tributary, because it rises on the other side of a range of mountains and joins the river two thousand feet below his ditch. To permit the shifting of his priority, so that he could take the volume designated in the right out of the river below the mouth of this creek, would be to recognize control over a stream as foreign to the original appropriation as to transfer the priority to an entirely different water-shed.

The experience gained by the division of Wyoming streams, has shown that the number in which the rights are based on the entire supply is exceedingly limited. On the contrary most streams are fed from a multitude of sources, some of which are below many early rights, and hence furnish a supply which was never used by the holders of these rights.

The limit of this report prevents the publication of all the investigations which have led to these conclusions. Like the maps of surveys we can only present one or two typical examples. The results of the Horse Creek measurements, which follow, could be duplicated by as marked gains or losses on scores of other streams where similar measurements have been made.

THE WATER SUPPLY OF HORSE CREEK.

Horse Creek rises in the Black Hills on the western border of Laramie County and empties into the North Platte near the Wyoming-Nebraska boundary. It is over 100 miles long, but with one exception all of the ditches now in use are found between the base of the foot-hills and Hawk Springs, a distance of seventy miles. The adjudicated rights are largely in excess of the stream's discharge, as they aggregate over 1,200 second-feet, yet they are derived from a creek whose greatest measured volume is thirty-two second-feet. Practically all the surface supply comes from the mountains at the head. Only two small creeks join it below and one of these formerly ran dry during the greater part of the irrigation season. The other is over-appropriated and nothing but seepage water comes from it. The first ten priorities aggregate thirty-five second-feet. Hence, if the stream was not reinforced except by surface tributaries, these priorities would absorb the largest flow ever measured and leave irrigators with later rights, amounting to over 1,100 second-feet, with a lot of paper priorities of little or no value. This is not the existing situation. Certain irrigators, whose priorities are far down the list, have always an ample water supply. Others with early rights have an intermittent and scanty supply. This is not due to improper division, but to the fact that some ditches are located below where the earlier rights drain the creek, while the more fortunate ones are farther down where seepage and spring waters reinforce it. Measurements extending over a period of ten years have proven that the greater part of the water supply in this stream does not come from the foot-hills, but from the seams in the rock ledges it cuts across. Some of these springs are large, one having a flow of three second-feet; but the greater number are so small that they have not been located.

In order to show more definitely the extent of this increase a series of measurements was made this year, the first in May and the last in August. The method pursued was to follow down the stream, and, wherever a ditch was diverting water, the volume taken out was measured, as was the discharge of the stream immediately below the headgate. Adding the two gave the volume above the headgate. These gagings began just outside the foot-hills where the three branches of the creek unite. They ended where Hawk Springs enters the stream over seventy miles below. The following table gives a summary of the results:

TABLE GIVING GAGINGS OF HORSE CREEK AND THE DITCHES TAKING WATER THEREFROM.

MAY 26TH TO MAY 30TH, 1898.

GAGINGS OF STREAM		Volume of water taken out of the stream by the ditches gaged		Total volume taken out of the creek	Volume diverted in excess of original supply and that received from tributaries	Volume received from subterranean sources
PLACE WHERE MEASURED	Volume Cu. ft. per sec.	NAME OF DITCH	Volume diverted Cu. ft. per sec.			
Junction of Forks, above all ditches measured, (1)	18.30	Jackson Ditch, (2)	2.00	2.00		
		Mull Ditch, (3)	2.42	4.42		
Below L. C. Ditch	14.40	L. C. Ditch, (4)	3.15	7.57		3.67
		Adamson Ditch, (5)	13.92	21.49	3.19	
Below Adamson Ditch No. 2	12.24	Adamson Ditch No. 2, (6)	6.12	27.61	9.31	21.85
		Adamson Ditch No. 4, (7)	13.32	40.93	22.63	
Below Adamson Ditch No. 5	15.24	Adamson Ditch No. 5, (8)	4.32	45.25	26.95	42.19
Below Carey Upper Ditch		Carey Upper Ditch, (9)	14.26	59.51	41.21	41.21
Below all Carey Ditches	2.34					43.55
One-half mile below Freeman's	16.50					57.71
Sprager Creek, (14)*	1.50					
Below Rutledge and Hellman Ditch	2.03	Rutledge and Hellman D. (15)	16.07	75.58	55.78	53.75
Above Little Horse Creek	3.72					59.50
Little Horse Creek, (17)*	3.00					
Above Brown and Miskimmins Ditch	16.66					69.34
		Brown & Miskimmins D., (18)	2.76	78.34	55.44	
		Y. X. Ditch, (19)	7.32	85.66	62.76	
Below Bear Creek	13.06					75.82
Hawk Springs, (21)*	4.02					79.84

Numbers in parenthesis refer to top of Diagram, page 71.
*Tributaries.

TABLE GIVING GAGINGS OF HORSE CREEK AND THE DITCHES TAKING WATER THEREFROM.
AUGUST 8TH TO AUGUST 12TH, 1898.

GAGINGS OF STREAM		Volume of water taken out of the stream by the ditches gaged		Total Volume taken out of the creek	Volume diverted in excess of original supply and that received from tributaries	Volume received from subterranean sources
PLACE WHERE MEASURED	Volume Cu. ft. per sec.	NAME OF DITCH	Volume diverted Cu. ft. per sec.			
Junction of Forks above all ditches measured	5.88					
At Mull's	4.75					
Between Mull's and Allen & Carpenter	6.42					1.67
Between Allen & Carpenter and L. C.	5.00					
Between L. C. and Adamson's, below Adamson's Ditch	2.86	Adamson Ditch, (3)*	1.87	1.87		
Creek between Adamson's and Carey's	6.12					
Below Carey Upper Ditch	5.00	Carey Upper Ditch, (9)	1.13	3.00		2.12
Below Carey Ditch No. 2	4.10	Carey Upper Ditch No. 2, (10)	.39	3.39		1.61
Below Carey Ditch No. 3		Carey Upper Ditch No. 3, (11)	.51	3.90		
Below Carey Ditch No. 4		Carey Upper Ditch No. 4, (12)		3.90		
Upper End P. O. Pasture	1.56					
Seven Mile Springs, (13)	3.00					3.00
Lower End P. O. Pasture	3.20					
One and one-half miles above J. H. D. Ranch	7.10					
At J. H. D. Ranch	12.50					
Sprager Creek, (14)*	1.34					
Below R. & H. Ditch		Rutledge and Hellman D. (15)	13.07	16.97	9.75	9.75

Numbers in parenthesis refer to top of Diagram, page 71.
*Tributaries.

Table Giving Gagings of Horse Creek and the Ditches Taking Water Therefrom. August 8th to August 12th, 1898.—*Concluded.*

Gagings of Stream		Volume of water taken out of the stream by the ditches gaged		Total volume taken out of the creek	Volume diverted in excess of original supply and that received from tributaries	Volume received from subterranean sources
Place Where Measured	Volume Cu. ft. per sec.	Name of Ditch	Volume diverted Cu. ft. per sec.			
Below Hoyt Ditch		Hoyt Ditch, (16)	1.35	18.32	11.10	11.10
Little Horse Creek, (17)*	3.10					
At La Grange		Brown & Miskimmins D., (18)	2.80	21.12	10.80	10.80
Between Bear Creek and Hawk Springs	4.48					15.28
Hawk Springs, (21)*	2.19					17.47

Numbers in parenthesis refer to top of Diagram, page 71.
*Tributaries.

The rainfall in May was above the average and its influence on the first measurements was apparent. While there were no surface streams the ground was wet and the flow of springs much larger than usual. The August measurement was made during one of the dryest periods of which we have any record. From the measurements given above it will be seen that in May the discharge above all ditches was 18.3 second-feet; to this was added the surface flow of Sprager Creek, Little Horse Creek and Hawk Springs, amounting in all to 8.62 second-feet. Hence, if none was lost by evaporation in the seventy miles, the total surface supply would be 26.9 second-feet. There was taken out over 85 second-feet and the last measurement showed 17 second-feet still in the stream, an apparent loss of less than 10 second-feet from evaporation in the creek channel and in the use of 85.6 second-feet in irrigation.

When the August measurements were made the irrigation of grain and pastures had ended and some of the ditches in use in May were dry. The first four ditches measured in May were in this condition. While there was a decided shrinkage in the amounts of all measurements, except the seepage from Sprager and Little Horse creeks, the relative importance of the subterranean supplies added to the stream was not diminished.

The amount of water above all ditches was less than six second-feet. That was the limit of the common supply. Whatever was added below could not be diverted or used by the upper ditches. Seventeen and forty-seven hundredths second-feet of seepage and spring water was so added and 4.44 second-feet entered from the two tributary creeks. In both measurements about four times as much water was taken out as there was in the stream at the start and in both cases approximately as much remained at the end as there was at the beginning.

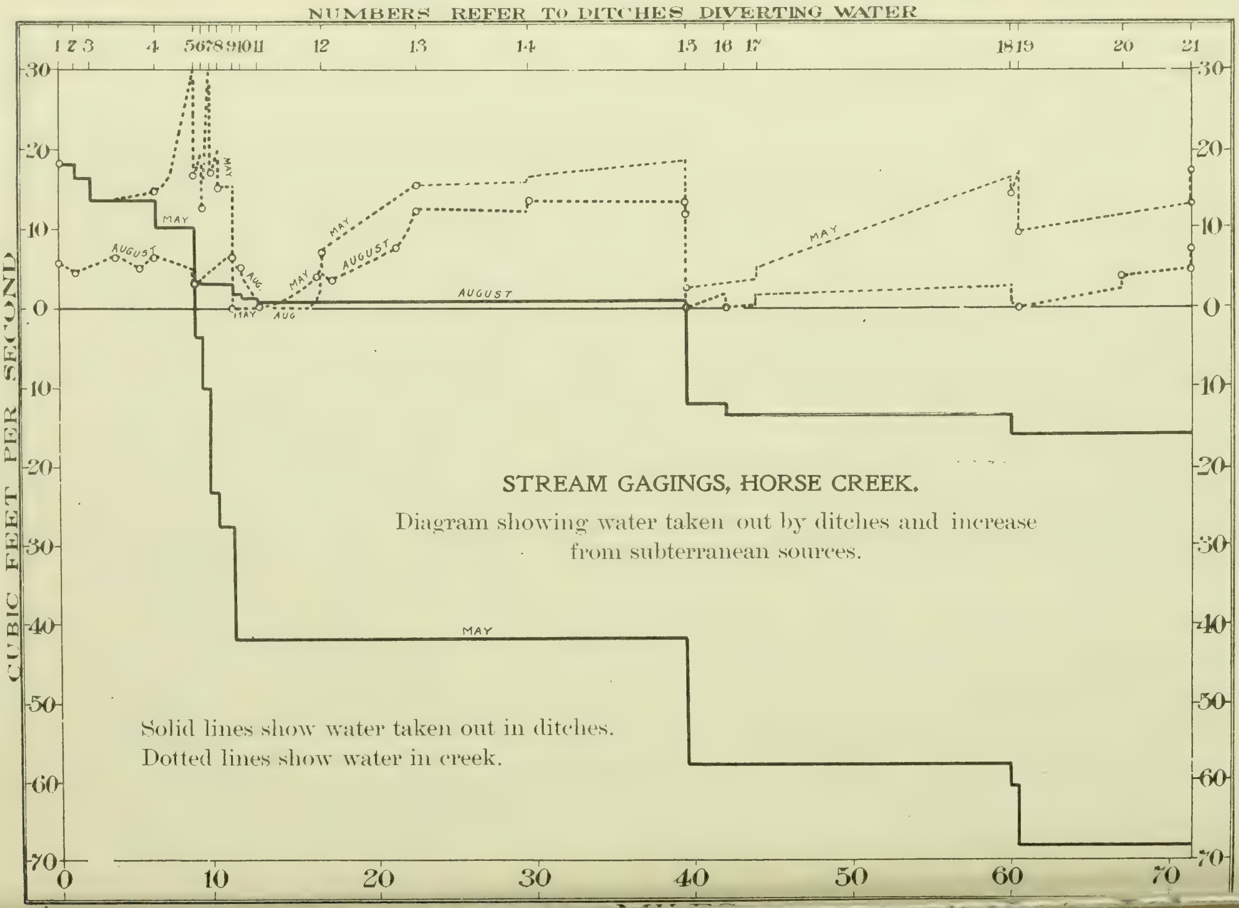
The subterranean increase comes from two sources. The winter snows and spring rains fill the cavities of the rocks and this finds its way slowly into the creek channel where it cuts through these ledges. The increase between the ten and forty mile points is largely from this source. For fifteen miles of this distance the creek flows through a canon with no ditches and no seepage from irrigation. That water from irrigated fields formed a considerable part of the August increase was shown by the fact that the volume of seepage water flowing out of the two tributary creeks showed no material diminution. There is also reason to believe that there has been a progressive increase in the amount of irrigation water which returns, as a comparison with similar measurements described in the report for 1889 shows a considerably larger percentage of increase.

This progressive increase in the water which returns from irrigated fields has been clearly shown on Horse Shoe Creek. For ten years after ditch-building began no land was irrigated for two or three miles above the mouth of the stream, although the land was fertile and ditch-building easy. Ditches above drained the channel; new comers were afraid to settle below them. They went higher up stream to get nearer the original supply in an effort to make position offset priority. But when the upper part of the creek had become unquestionably over-appropriated springs began to appear near its mouth. While the upper ditches were being closed down to protect early rights water was going to waste at the mouth of the creek. One ditch was built to use it. Later a second ditch was built and the farms under them, although last in priority, have all the water needed.

On some streams the volume of return or seepage water is small and does not seem to increase. This appears to be due to the underlying strata being inclined away from the channel instead of toward it. Spring Creek, a tributary of the Platte, is an instance.

This office is frequently requested to approve changes in the place of diversion and use of appropriations. The holders of early rights, which experience has shown to have little value, desire to move them to some other point on the stream, where from the influence of seepage or other causes the supply is more abundant. In some cases the request comes from a speculator who sees in these early *paper* rights a chance to blackmail later appropriators whose ditches are located where the supply is more abundant. I have refused every such request and have notified every one that unless either the legislature or courts make the right to move a priority absolute I shall do all in my power to prevent such transfers and to avoid our repeating the blunder made by some of the other arid states. In my opinion this office can do the irrigators of the State no greater service than to prevent the abuses which in all countries have followed the recognition of such right.

I can see no more reason for permitting an early appropriator near the head of Horse Creek to move his priority down the stream to get the benefit of the springs which he never used than there would be to sanction the transfer of his priority to the Laramie. In both cases it would enhance the value of the migratory right, but it would rob some other appropriator and unsettle and demoralize our whole irrigation system.



STREAM GAGINGS, HORSE CREEK.

Diagram showing water taken out by ditches and increase from subterranean sources.

Solid lines show water taken out in ditches.
Dotted lines show water in creek.

AGRICULTURAL PROBLEMS AND POSSIBILITIES OF NORTHERN WYOMING.

IMPRESSIONS OF A CAMPING TRIP.

NOTE—Wherever the term second-foot is used it is equivalent to the expression "cubic foot per second." The term acre-foot refers to the volume of water which would cover one acre to the depth of one foot and is equivalent to 43,560 cubic feet.

A discharge of one cubic foot per second for one day equals 1.98 acre-feet.

Early in 1897 I decided that before snow fell again Wind River and Jackson Hole, the two irrigable districts of the State I had not seen, should be visited. To do this was no holiday affair. Both are far from railroads; one might truthfully say, from good roads of any kind. To make even a hasty examination of their agricultural prospects required so large an outlay of both money and time that I had not before been able io attempt it, though it had long been in mind. When, therefore, a proposal to unite our forces came from Captain H. M. Chittenden of the Corps of Engineers, U. S. A., the offer was gladly accepted. Captain Chittenden wished to examine some reservoir sites in the Big Horn Mountains, and we arranged our trip to begin with his work and end with mine. To do this we had to start at Buffalo, Wyoming, climb the Big Horn Range to the head-waters of Piney Creek and from there to return to Sheridan to outfit for the longer journey. As the latter involved a ride on horseback, and in wagons, of over 600 miles, in which three lofty and rugged mountain ranges had to be climbed, and two of the largest rivers in the State forded, we had to have a good outfit. The need of this was not lessened by the fact that much of the distance would be through a region devoid of either settlers or houses, making the carrying and cooking of our meals, and providing our own shelter, a matter not of choice but necessity.

Our examination of Piney Creek was greatly aided by the courtesy of the Rock Creek and Piney Reservoir Company and their engineer, Mr. Bond. This company is an association of farmers on Rock Creek who have not water enough to irrigate the land they have under ditches, and who have banded themselves together in an effort to, in some way, increase the supply. Being familiar with the region in which the reservoir sites were located, they kindly offered to guide us, and furnished the tents, pack horses, saddle horses and provisions for the trip. As this involved a climb from one mile above sea-level at Buffalo to over two and one-half miles above that level at the highest point we reached, the assistance which they rendered was highly appreciated and contributed much to the comfort and success of the trip.

Piney Creek is one of the most important streams rising in the Big Horn Range and, owing to peculiar physical conditions, the use of its waters in irrigation has created about as many water problems as there are ditches. Its head-waters drain the summit of the main range for a long distance, and give to its discharge a perennial character not shared by the smaller streams on either side, which are cut off by its drainage from the late water supply.

It not only rises above these smaller streams; it stays above them until after it leaves the mountains, from which it emerges on a ridge instead of in a valley. This ridge is a conspicuous feature of the topography of that region. Its summit is the boundary between Johnson and Sheridan counties and the divide which separates the drainage of the Tongue and Powder rivers. Piney Creek is among the largest tributaries of the latter, yet one mile from where it leaves the canon it is less than fifty feet below the top of this divide. Hence, its waters can be and are diverted and used in both drainage basins. These smaller creeks do not have a perennial flow. There is a flood in the spring and a shortage in July. Irrigators along them not having enough water to mature their crops have gone to Piney Creek for a supplemental supply. One ditch after another has been built to turn water from the larger stream into the heads of the smaller ones and as the volume became less these ditches have climbed higher, until the last one constructed has its headgate nearly 9,000 feet above the sea and the water it turns into Rock Creek flows across a mountain through a dense forest of pine and spruce, in a channel blasted out of solid rock. The drain on Piney Creek during the last half of the season is, therefore, exceptional. It is the sole dependence of irrigators along its banks and the chief reliance of those along the eight smaller streams. It cannot meet all these demands, and the result has been that the shortage on the smaller creeks now extends to the larger one. The limits of irrigation by the natural flow alone have, therefore, been reached, and of profitable ditch building based thereon exceeded. This year the ditch leading to Rock Creek had been used only ten days when the claims of prior appropriators made it necessary to close the headgate. No ditch to be built hereafter can expect to receive any of the natural flow after July 15th, and without this crops cannot be matured.

The ditches already built cover four times as much land as is being cultivated and four times the area on which crops can be matured from the natural flow of the stream. All that is done or can be done with the three-fourths not now being cultivated is to spread water over it in the flood season to increase the pasturage or to raise one crop of alfalfa instead of the three which an ample water supply would make possible.

Many of the ditches already built have to remain idle and empty during more than half of the irrigation season, and the value of the greater part of the land under them is but little more than it will bring for pasturage alone.

The period of greatest need in irrigation extends from the middle of June to the middle of July, while the demand during the *last* half of July is often as great as during the *first* half of June. There is no profit in planting crops which cannot be matured, hence the limit of the area, which can be cultivated by the natural flow alone, is not fixed by the flood discharge of May and June but by the short supply of July. A record has, however, been kept on Clear Creek and the proximity of the two streams and the fact that they both rise on the slope of Cloud Peak warrants the belief that the ratio between the June and July discharge on one will hold good for the other. In 1897 the mean June discharge of Clear Creek was 279 second-feet, while in July it was only 89 second-feet, about one-third of the previous month. In 1898 the mean discharge was 560 second-feet; in July it fell to 180 second-feet, while in August irrigators had to get along with an average of 48 second-feet. An examination of the earlier records shows that the mean discharge of June is nearly three times that of July. Irrigation based on the natural flow alone involves, therefore, a perpetual loss of two-thirds of the June discharge, to say nothing of the water which runs to waste before irrigation begins.

In 1898 the study of the duty of water, which had been interrupted for several years, was resumed. One of the objects of this investigation is to determine the relation between the needs of crops during the different months of the irrigation season and the volume of stream discharges during those months. Records of the quantity used on three different farms in widely separated sections of the State were secured. One of these was interrupted by an accident, but this did not impair its value for the purposes of this discussion. In each case the farmers were requested to begin using water as soon as they thought it would do any good and to use as much as they thought beneficial. In other words, to irrigate just as they would if no record was being kept. In neither instance was an acre of land irrigated or a drop of water used in April or May. Reports from a half dozen canals also state that irrigation this year did not begin until June. In all the records kept by the office in this and previous years we have not a single instance where cultivated crops were irrigated before June 1st. The inference seems fair, therefore, that the greater part of the water supply of our streams during the months of April and May runs to waste. This is confirmed by the stream gagings at Uva on the Laramie and by our general observations.

Now, the total May discharge on Clear Creek in 1897 was 20,295 acre-feet, or more than the aggregate of July, August and September combined. In 1898 it was about equal to that of the last half of the season, while more water ran to waste in June than was used during the whole season. From various facts we draw the following conclusions relative to the use of water on Piney Creek:

1st. That irrigation based on the natural flow is governed by the discharge of the last half of the season and that the limit of such irrigation has now been reached.

2nd. That more water runs to waste in May than is used after July 1st and the loss in May and June is greater than the volume used during the entire year.

3rd. That for seven months, from October 1st to May 1st, no water is used in irrigation.

4th. That, notwithstanding the need of more water and the facilities already provided for its distribution and beneficial use, more than three-fourths of the entire supply runs to waste and will continue to do so until some provision is made to increase the late water supply by storage.

RESERVOIR SITES ON PINEY CREEK.

The farmers of this section are now fully alive to the need of providing a reserve supply for the season of scarcity. In 1895 and 1896 several reservoir filings were made on lakes on the middle and south forks of Piney Creek and the Engineer's office lent some assistance toward a survey to determine their capacity.

The two main branches of Piney Creek have their sources in lakes which border the immense snow fields on the north and west of Cloud Peak. At this point they are about half a mile apart, but they do not unite for twelve miles. Beginning above timber line, they are at first a succession of small lakes united by cascades and water-falls. Below timber line the

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KEARNEY LAKE.

LAKE ON PRAIRIE DOG CREEK

LAKE ON CLEAR CREEK

LAKE ON TEN SLEEP CREEK

RESERVOIR SITES, BIG HORN MOUNTAINS.

lakes become larger and the distance between them greater. It is only these lower and larger lakes that can be profitably utilized. Of these there are three on the south or larger branch, and one on the middle one. The latter, known as Kearney Lake, has been filed on by an association of farmers from Prairie Dog Creek, while Elk and Cloud Peak lakes and Piney Reservoir, a basin which was formerly a lake, but which has been drained by the erosion of its outlet, have been filed on by the association of farmers from Rock Creek, before referred to.

Below is an outline of the location and proposed plans for improvement of the sites, filed in the State Engineer's office, or surveyed under Capt. Chittenden's direction.

ELK LAKE.

This lake is about 11,000 feet above sea level and is situated at the head of one of the branches of South Piney Creek. The opportunity to impound water here is only limited by the supply, as the dam can be built high enough to hold all the water that enters the lake for the entire year. The plans filed with the State Engineer show an earth dam eighteen feet high and 760 feet long on top. This would create a lake about three-fourths of a mile long and half a mile wide, covering about 197 acres and holding 2,500 acre-feet. The estimated cost is $8,000. The greatest objection to Elk Lake is the small area which drains into it. The discharge in July, 1898, as near as it could be determined, was about four cubic feet per second. It would require a mean discharge of this volume for the entire season to fill the reservoir.

KEARNEY LAKE.

The plans for Kearney Lake Reservoir show a lake about one and one-fourth miles long and half a mile wide, covering 146 acres and holding 3,800 acre feet of water. These plans contemplate an earth dam thirty-five feet high and 600 feet long on top. I am of the opinion that a rock dam will be much safer and that it can be built at little additional cost, and the plans filed should be modified to this extent.

The remaining descriptions are taken from the report of Mr. Bond to Capt. Chittenden,* the plans which he prepared being more complete than those filed with the State Engineer. They also embrace Lake De Smet, a natural depression about three miles long and one mile in extreme width, on which no filing has as yet been made in this office.

CLOUD PEAK LAKE.

"As previously intimated in the report on the Piney water shed, the site selected for this reservoir is that now occupied by lake No. 9 of the series of twelve which form a part of the basin of Piney Creek. This lake is nearly one and one-third miles in length and a little less than one-half mile in width. Its location is about one mile below timber line, at an altitude of 10,000 feet, and it is surrounded by dense forests of spruce, fir and balsam. The water is clear, cold and of unknown depth, although near the lower end, where the lake narrows to the site for the dam, a few soundings gave an average depth of fifty-two feet. The plans for utilizing this site call for a dam thirty-four feet in height at the highest point and contemplate a rise in the surface of the lake of thirty vertical feet. In addition to this, ten feet of water below the present level is to be drawn off through the sluiceway constructed for drawing off the water impounded by the dam. It is thus proposed to draw off water from a surface having an average superficial area of 160 acres, making 6,800 acre-feet, or 300,000,000 cubic feet of water all told. Piney Creek enters one end and flows out at the other, and the drainage area tributary to the lake is coincident with that of the creek to this point, and is thirty square miles in extent. Its character has been heretofore described. Two plans for a dam are submitted, one of earth and loose rock and the other of loose rock with concrete core. Both are feasible, but the latter is the

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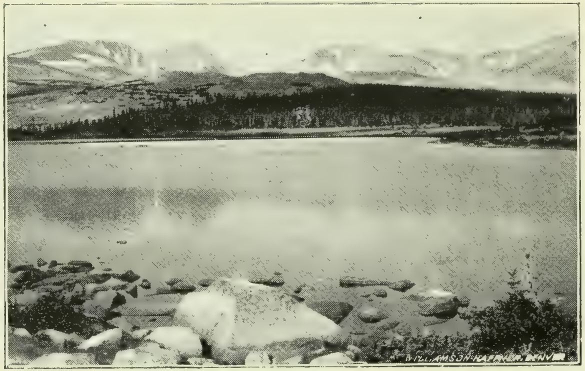
* Reservoir Sites in Wyoming and Colorado, pages 70-71.

Mead Lake.



Elk Lake.

Cloud Peak Lake.

Outlet, Cloud Peak Lake.

RESERVOIR SITES, BIG HORN MOUNTAINS.

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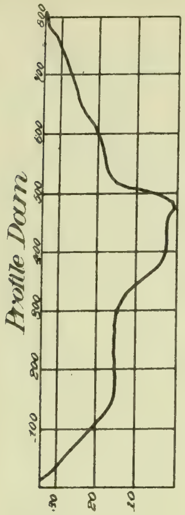
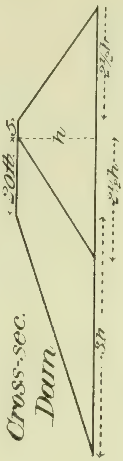
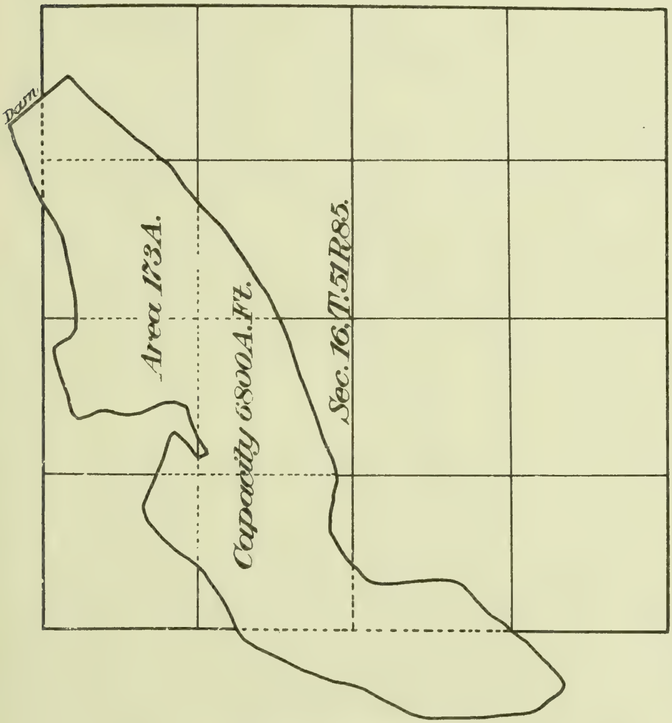




cheaper. The cost of the former is estimated at $24,839, and of the latter at $21,259, each complete and ready for use. The site for Cloud Peak Reservoir was originally located and the right of way obtained from the United States by a company of Rock Creek, Wyo., farmers associated together and known as the Rock Creek and Piney Reservoir and Ditch Company, and there is transmitted herewith a retransfer to the United States of all rights appertaining to said right of way accruing to the company above, conditioned on the construction of the work by the Government.

"This reservoir is located in Sections 9, 16 and 17, Township 51 north, Range 85 west, of the sixth principal meridian in Wyoming."



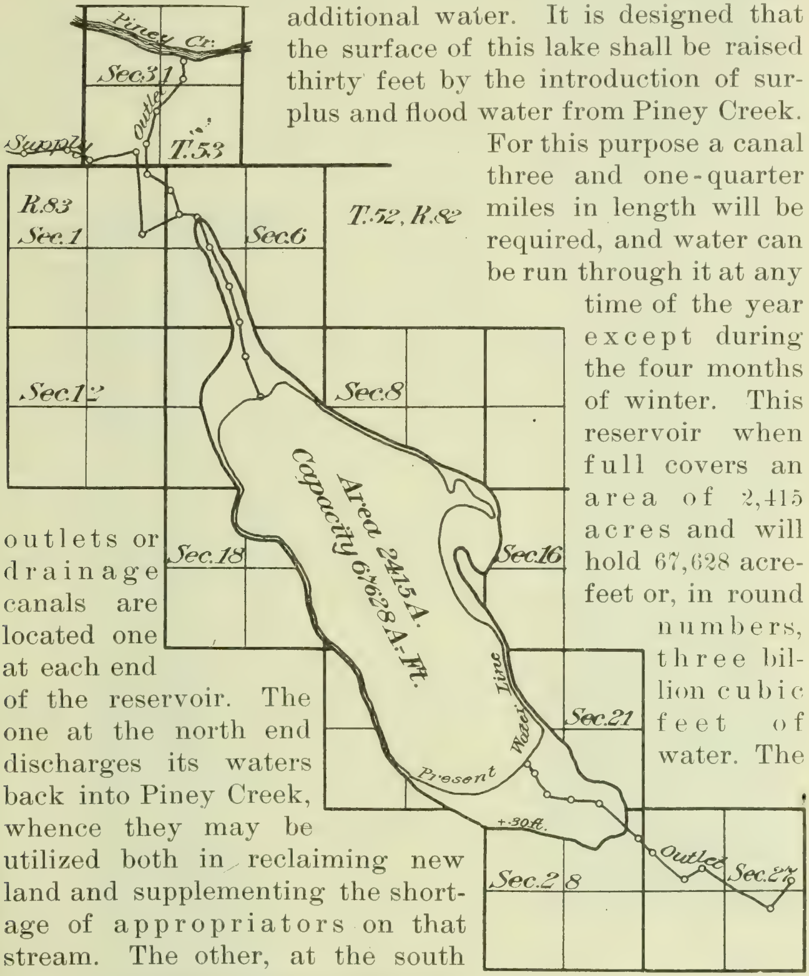
CLOUD PEAK RESERVOIR

PINEY RESERVOIR.

"The site for this reservoir is an open park about one and one-half miles in length and one mile in width. It is on the main fork of Piney Creek and is about six miles below Cloud Peak Reservoir. It is not a lake but is a natural basin through which Piney Creek flows from end to end, and is selected for reservoir purposes because of the comparatively small expense attached to impounding a large body of water here. It is surrounded by pine forests, where banks of snow are found still plentiful in the middle and last of June, and has a drainage area tributary to it of sixty-five square miles. The altitude of this site is 8,800 feet. The plans for utilizing this basin for reservoir purposes call for a dam fifty-four feet in height at the highest point and contemplate storing water to a depth of fifty feet. The superficial area covered by this reservoir when full is 368 acres and the volume of the water impounded is 11,040 acre-feet, or 480,000,000 cubic feet. The construction is of earth, backed by loose rock, and the estimated cost is $56,277, complete. This reservoir was originally located by the Rock Creek and Piney Reservoir and Ditch Company, and right of way from the United States obtained as in the case of Cloud Peak Reservoir. A retransfer of all rights accruing to the company on account of said grant of right of way and under the same conditions is also transmitted herewith. Piney Reservoir is located in Sections 23, 24, 25, and 26, Township 52 north, Range 85 west, of the sixth principal meridian in Wyoming."

LAKE DE SMET RESERVOIR.

"The two reservoir sites heretofore described form what might properly be termed the winter storage basin for surplus Piney waters, since both of these reservoirs, being located directly upon the stream itself, may be utilized in impounding the winter flow, a supply that may not be conserved in any other way. To supplement these and catch the surplus flood waters is the proper function for Lake De Smet Reservoir. The site of this reservoir is a natural basin located in the rolling country just to the east of and about six miles from the foot of the Big Horn range. It is situated in a natural basin, is three miles in length by one in width, and will require no dam for impounding additional water. It is designed that the surface of this lake shall be raised thirty feet by the introduction of surplus and flood water from Piney Creek. For this purpose a canal three and one-quarter miles in length will be required, and water can be run through it at any time of the year except during the four months of winter. This reservoir when full covers an area of 2,415 acres and will hold 67,628 acre-feet or, in round numbers, three billion cubic feet of water. The outlets or drainage canals are located one at each end of the reservoir. The one at the north end discharges its waters back into Piney Creek, whence they may be utilized both in reclaiming new land and supplementing the shortage of appropriators on that stream. The other, at the south end, discharges its water onto the broad but hitherto uncultivated valley of Box Elder Creek, where for a distance of twelve miles it may be used almost entirely on virgin soil. The residue passes thence into the valley of Clear Creek, where for thirty-five miles the land lies waiting the plow of the pioneer. There is practically no



LAKE DE SMET RESERVOIR.

limit to the extent of irrigable land that can be brought under the influence of a water supply in Lake De Smet, and the amount that will be so brought depends entirely upon the volume impounded there.

"The improvements designed for this reservoir consist of a supply canal and the two outlets or drainage canals, with their necessary gates and sluiceways. The supply canal has a fall of four feet to the mile, and at seven feet depth of water has a carrying capacity of 725 cubic feet. The banks are sufficiently high to permit of one or two feet additional in depth being carried in safety as soon as the earth becomes settled. It is believed that this is amply large to fill all requirements. Each discharge canal is supplied with one six-foot sluicegate, which will discharge 425 cubic feet per second—enough to satisfy all probable demands upon it.

"There are no private claims connected with this reservoir as such, but there will be a few hundred acres of grazing land submerged in raising the water level. Their estimated value is included in the estimates of cost, which amount to a total of $90,688, complete.

"Lake De Smet Reservoir is located in Sections 6, 7, 8, 16, 17, 18, 19, 20, 21 and 28, Township 52 north, Range 82 west, of the sixth principal meridian in Wyoming."

SUMMARY, CAPACITIES AND COST.

NAME OF RESERVOIR	Capacity in Acre-Feet	Estimated Cost	Cost per Acre-Foot
Elk Lake	2,500	$ 8,000.00	$3.20
Kearney Lake	3,800	7,600.00	2.00
Cloud Peak Lake	6,800	31,040.75	4.56
Piney Reservoir	11,040	70,226.25	6.37
Lake De Smet	67,000	113,360.00	1.67
TOTAL	91,140	$230,207.00	

According to these estimates the average cost of preparing to store an acre-foot of water will approximate two dollars and fifty cents. Every acre-foot stored will add an acre to the area of land which can be cultivated, and change its

KEARNEY LAKE.

DOME LAKE.

Stimson, Photo, Cheyenne.

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selling and productive value from grazing to farming land. The significant feature about this is that two dollars and fifty cents covers the entire outlay required. The ditches now built will serve to distribute the increased supply, and the expense of looking after the reservoirs will in part be met by lessening the outlay now required to pay the water commissioner for his services in closing headgates in time of scarcity.

It now remains to be determined how many acre-feet will have to be stored in order to utilize all the water which now runs to waste. The simplest part of the problem is the storage of the water which runs to waste from October 1st to May 1st. As none of this is used in irrigation it will all have to be stored if it is to be saved. The location of these lakes in the channel of the stream makes this possible. All that will be required will be to close the outlet gates. From over a score of winter observations made during the past ten years I do not think the minimum falls below fifty second-feet, and if the augmented discharge of April is taken into account I believe the average will reach seventy-five second-feet for the entire period. This in seven months would amount to about 30,000 acre-feet, or a little more than the capacity of the reservoirs above Lake De Smet.

At present nearly all the water which flows out of the mountains in May runs to waste and by far the greater part during June, but the use of the stored 30,000 acre-feet to relieve the shortage after July 1st would practically add that many acres to the ten thousand acres now under cultivation. Increasing this three-fold would augment the volume taken from the stream in June to some extent, but not in the ratio of the increase in acreage cultivated, because much of this land is now watered during the flood season to increase the growth of grass. Assuming, however, that it requires two acre-feet to produce an acre of crop and that half of this is taken from the stream in May and June, it would require an average discharge of about 340 second-feet to supply it.

The next question is how near this will come to absorbing the discharge during these two months. The greatest measured discharge was 1,500 second-feet in June, 1893. This measurement was not of the entire supply, but of the amount going to waste, as the gaging was made below all important ditches but one. In other seasons the maximum has fallen to one-half this, but it is believed that an average of 500 second-feet for these two months is not an excessive estimate. This would leave a surplus of 160 second-feet. Storing half of this for use after July 1st would permit of the direct use of the other half; would add another 10,000 acres to the irrigable area and absorb the flow of the stream for the entire year.

If these estimates and conclusions are correct the complete use of Piney Creek will require:

1st. The fullest improvement of the mountain reservoirs for the storage of the winter flow.

2nd. The improvement of Lake De Smet, but not to its maximum capacity, to store the surplus from April 1st to July 1st.

Doing this will increase the acres which can be cultivated with safety and profit from 10,000 to 50,000 acres and increase the value of 40,000 acres now under ditches, but without an ample water supply, from what it now has for pasturage purposes to that of the best farm land under the early priorities on the stream. It would double the population of that section because it would quadruple its productive capacity and more than double the amount of work to be done.

The only respect in which the benefits of storage may be over-estimated is in the volume which can be stored in winter. Two acre-feet, the amount assumed to be needed to produce crops, is more than was used where the volume was measured in 1898. There is in addition a considerable volume of flood water in the smaller creeks, which now goes to waste, which could be stored in Lake De Smet. No account whatever has been taken of the flood waters of Rock, Shell and other creeks.

PUBLIC vs. PRIVATE OWNERSHIP.

With such returns in sight, why have not these reservoirs been built? The reasons are apparent and conclusive.

In the first place, those who need them most have not the money to build them. They are the holders of late priorities, the cultivators of the farms first cut off from the stream when it runs low. Because of this their lands have the least value and they are least able to incur the outlay.

All these basins, except Lake De Smet, discharge into the main stream and every appropriator below would have a chance to absorb part of the stored supply. Parties undertaking to build these works as a private investment would not, therefore, be able to reap any return from their outlay unless some plan could be devised for a more efficient public control of the stream and its distribution among users than has heretofore been possible.

Thus far efforts to enlist all the irrigators in this work as a community enterprise have failed. Many are so situated that they believe if the reservoirs are built and the stored water turned into the stream they can steal enough to irrigate their lands and, hence, do not propose to contribute anything so long as there is a possibility of getting what they need for nothing, and the experience of those who built the ditch to turn the water of Piney Creek into Rock Creek showed that it is impossible, without a large increase in expenses for supervision on the part of the state, to prevent this being done.

When the irrigation map of this region is studied and it is seen how the priorities are intermingled, and how the ditches ramify not only in one drainage basin but across half a dozen streams, it becomes manifest that present methods will never serve to direct the disposal of this stored water and deliver it to purchasers as an article of private merchandise. If this water should be stored by investors and disposed of only to those who would pay for it, it will necessitate a distinction between the priorities for the stored water and priorities for the use of the natural flow, which will lead to unending complications, and any attempt to frame laws to make this business an attractive field for private investments will serve to increase rather than lessen these complications. No such law can be made effective without creating a monopoly which may be a means of oppressing these farmers instead of helping them. To increase the expense for water commissioners in order to secure the profits of the owner of this stored water would be laying a burden on the public for the protection of private rights which will not, in my opinion, be sanctioned by the State's law-makers.

These arguments only apply to situations like this. Some reservoirs can be built and successfully operated as private enterprises and are being so built and managed, but it is my conviction that important systems, like the one under consideration, ought to be constructed and owned as public works, and I am fully in accord with the following views of Col. Chittenden, which are quoted from page 53 of his admirable report:

"There is another view of great public importance which also tends in the same direction. It is becoming more and more apparent in the course of irrigation development in the West that the waters of the streams should not be made the subject of private property, but that they should inhere in the land to which they are applied, and that purchase or sale of water as a commodity should not be allowed. Although in most states the contrary doctrine has hitherto prevailed, the disposition of the courts at present and the views of practical irrigators seem to incline more and more to the doctrine of the public character of all streams. In one state, Wyoming, this more enlightened doctrine has gained a secure foothold, and the entire administration of the water laws is based upon it. That state has profited by the mistakes of others, and although great pressure has been exerted in favor of the opposing doctrine it has not yet yielded in a single point. It is clear that this principle can best be promoted, so far as stored waters are concerned, by having the storage waters public property. Their construction by private agencies is hardly separable from the control and disposition of the water as a commodity.

"A proper development of a storage system for the waters of western streams, it is thus seen, can not be expected through private agencies. It must be accomplished through some form of public control."

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DITCH ACROSS DIVIDE BETWEEN LITTLE AND BIG GOOSE CREEKS.

DOME LAKE RESERVOIR

DAM AT OUTLET, DOME LAKE.

STORAGE OF WATER ON BIG AND LITTLE GOOSE CREEKS.

The situation in the Goose Creek valley is very like that along Piney Creek. Sheridan, the largest town in the northern half of the State, is situated at the confluence of these two streams. Agriculture is its chief support, and the table lands, which surround it on three sides, are gridironed with ditches. But the conviction that there is something wrong or amiss in the use of these ditches is the first thing which impresses a visitor to this section. As soon as the city limits are reached it is found that thousands of acres of fertile table-lands are used for nothing but pasture. The ditches which cover these lands are large and well built, but they are empty, or nearly so, during more than half the season. This land is owned and fenced and the canals to water it have been completed at heavy expense It adjoins a town with an excellent market for all it will produce and the land which is farmed yields handsome returns. The question at once arises, Why is it left in this condition? The answer is, Because the priorities of the appropriators through the canals that water it are so far down the list that by July there is nothing left in the stream with which to mature crops, should any be planted.

For the past three years Little Goose Creek has been drained before the end of June. This means that the earlier rights not only absorb all its natural flow, but all the water which can be spared from Big Goose Creek as well, since four ditches from the larger stream turn water across mountain divides into the head of its lower and smaller tributary.

On both streams, therefore, the limit of irrigation from the natural flow has been reached. It leaves thousands of acres of the best land as arid as it was when Indians roamed over that region, and renders the costliest ditches in the county unprofitable because for half the season there is nothing to fill them. If in some way water can be secured to fill these ditches as long as it is needed, it will bring all this land under cultivation and more than double its productive and selling value. So much for the need. Let us now consider the extent of the possible supply. On this stream as on others the scarcity is not continuous. On the contrary, for nine months of the year there is a large surplus, but it is the weakest link which measures the strength of the chain.

In 1896, 5,432 acre feet of water ran to waste in May and June in Little Goose Creek. If that could have been held back until July it would have added 5,000 acres to the farming land immediately about the town and replaced the distressing prospect of aridity which now surrounds it by a showing of agricultural opulence which would do more to put Sheridan on the up-grade than any other resource in sight.

The important increase in the irrigable area of this valley will come, however, from caring for the surplus in the larger stream. Enough gagings have been made of Big Goose Creek to render it certain that more water runs to waste in April, May and June than is used during the season.

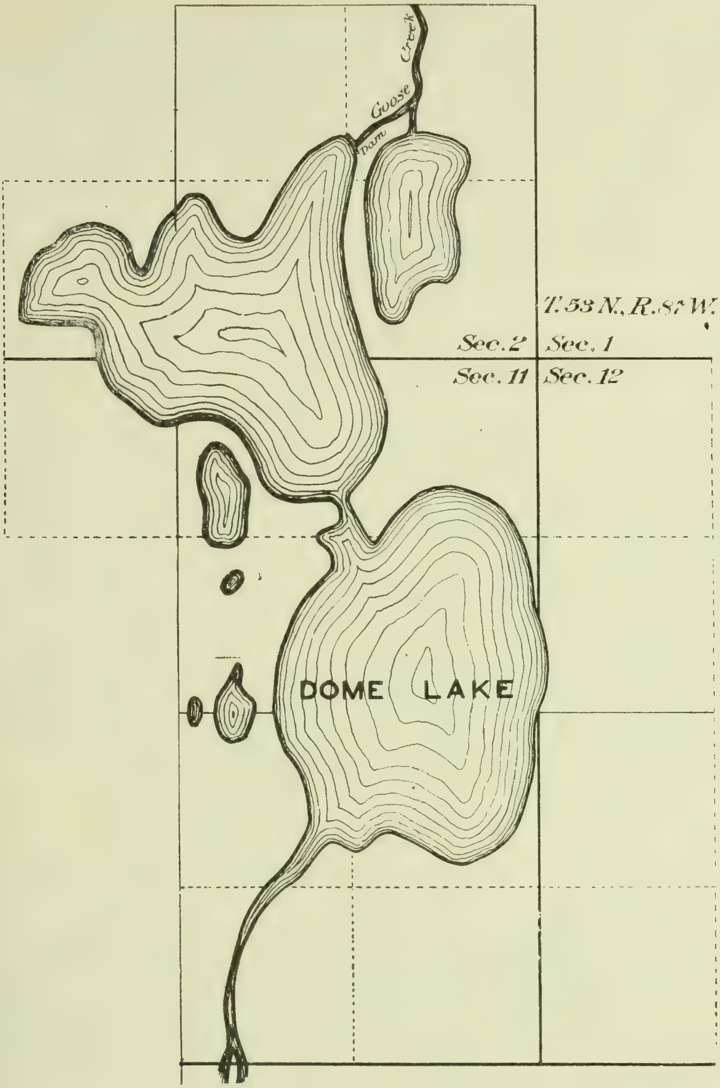
During these three months, in 1896, twenty-four thousand acre-feet left this valley without doing any service. A much larger volume escaped use this season.

RESERVOIR SITES.

The opportunities for storage on this stream do not appear to be as great as on Piney Creek; but this may not be correct, as the mountains have not been prospected as thoroughly. The sites thus far surveyed and of which maps have been filed in the Engineer's office give a combined capacity of over 9,000 acre-feet, distributed as follows:

Dome Lake Reservoir	6,400 acre-feet.
Denio Reservoir	1,743 acre-feet.
Barr Reservoir	577 acre-feet.
Cross and Cruse Reservoir	200 acre-feet.
Martin Reservoir	108 acre-feet.
TOTAL	9,018 acre-feet.

The benefit which would result to Sheridan County from the building of these reservoirs is unquestioned, but it will be so widely diffused as to make their construction almost as much a matter of public concern as the building of roads or



Water Area of Reservoir, 320 Acres.
Capacity 6,400 Acre-Feet.

lighting of streets. There are so many ditches which would need a portion of the water and so many different farms to be supplied for a fraction of the season, that any one building these works as a private enterprise would find it almost impossible to deliver his commodity unless the State would afford protection by taking charge of the distribution. The situation here, as on Piney Creek, seems to point clearly to the advantage of having important reservoirs built by the public and maintained under perpetual public control.

STORAGE ON OTHER BIG HORN STREAMS.

In 1897 Mr. Grouard, the noted scout, told me that from the summit of Cloud Peak 150 mountain lakes could be counted. Those I saw that season, on the head waters of Tongue River and Paint Rock Creek, caused me to regard his estimate as conservative. Subsequently, in crossing the divide between the head waters of Medicine Lodge and Paint Rock we counted over forty morainal lakes, varying in size from ten to 160 acres. Many of these can be utilized at small cost, so that with the possible exception of Shell Creek and Powder River it seems that provision can be made for utilizing all the moisture which falls on the Big Horn Range.

THE BIG HORN BASIN.

From Sheridan we started west to cross the Big Horn Range. We started from this point because I desired to observe the progress which had been made in four years in the irrigation of the valley of the Grey Bull River, where the number of applications for water rights had led me to believe that the stream was in danger of being over-appropriated. From Sheridan to the end of our journey a record was kept of the distances between stopping placees and the elevation of these places above sea level. For this table I am indebted to the Hon. E. S. Nettleton, who looked after the instruments:

TABLE OF ODOMETER DISTANCES AND ANEROID ELEVATIONS TAKEN EN ROUTE FROM SHERIDAN, WYOMING, TO YELLOWSTONE PARK, BY E. S. NETTLETON, AUG. 18TH TO SEPT. 10TH, 1897.

No. Camp	NAME OF CAMP	Distance from Sheridan	Distance from last reading	Aneroid Elevation	REMARKS
	Sheridan	0.00	0.00	3752	Elevation from R. R. folder.
1	Midday, at spring, foot of steep hill	18.04	18.04	4129	
2	Night, on Goose Creek	27.85	9.81		
3	Midday, Dome Lake	36.03	8.18	8720	
4	Night, on west side pass over Big Horn Mountains	50.27	14.24	9450	U. S. G. S. El. Pass 9601.
5	Midday, with U. S. G. S. Surveyors	63.38	13.11	8800	U. S. G. S.
6	Night, Hyattville, on Paint Rock Creek	82.97	19.59	4550	Morning Bar. 4325
	Bonanza, on No Wood River	91.94	8.97	4010	
7	Morgan's, on No Wood River	101.07	10.13	3880	
	Big Horn River Crossing	105.97	4.90		
8	Night, Otto, on Grey Bull River	124.05	18.08	4010	
9	Midday, Avant's Ranch	138.38	14.33	4575	
10	Night, Y. U. Ranch, on Grey Bull River	152.64	14.26		
11	Night, at Meeteetse, on Grey Bull River	167.70	15.19		
12	Night, at Pitch Fork Ranch (Otto Franc's)	181.76	14.00	6810	
13	Night, at Col. Pickett's	188.76	7.00	7480	
	Franc's Ranch, on return . . .	195.76	7.00	6360	
14	Midday, Meeteetse, on return	209.76	14.00	5925	
15	Night, on Gooseberry Creek*	180.02	12.55	6075	*Distance from Sheridan. Travel above Meeteetse and return omitted.
	Divide between Gooseberry and Meeyero creeks	199.15	19.13	7120	
16	Midday, at spring on branch Meeyero Creek	200.00	.85	6880	Temp. spring 43° F.

TABLE OF DISTANCES AND ELEVATIONS.—*Continued.*

No. Camp	NAME OF CAMP	Distance from Sheridan	Distance from last reading	Aneroid Elevation	REMARKS
17	Night, Pardee's Ranch, on Owl Creek	215.44	15.44	6570	
	Pass over Owl Creek Mountains			8025	
18	Midday, (dry camp) near Muddy Creek	239.06	13.57	7425	
19	Night, Lost Camp, Dry Creek	250.00	11.00	6250	Morning Bar. 5950
20	Midday, on Wind River, Crow Heart Butte	260.23	10.23	5650	
21	Night, on Wind River	277.00	16.77	6140	Morning Bar. 6050
22	Midday, on Wind River	291.30	14.30	6710	
23	Night, upper Wind River	306.51	15.21	7425	Morning Bar. 7270
	Union Pass	317.62	11.11	9960	
24	Midday, on Pacific slope	319.93	2.31	9500	
25	Night, on Green River slope	328.68	8.75	9450	
26	Midday, on Bacon Creek	343.10	14.42	8520	
27	Night, on Gros Ventre River	359.69	16.59	7750	
28	Midday, foot of hill, near Gros Ventre			7200	
29	Night, Antelope Spring			6925	
30	Night, Cunningham's Ranch			6820	Morning Bar. 6750
31	Night, Smith's store, outlet Jackson Lake			6800	Morning Bar. 6725
	Night, Jackson P. O.	394.98	35.29*		*From Camp 27.
	Pettigrew's Ranch, on return from Jackson P. O.		5.37		
31	Smith's store, or Camp 31	432.96	37.98		37.98 miles Jackson P. O. to Smith's.
32	Night, north end Jackson Lake	445.53	12.57	6540	
33	Midday, on Snake River and on Timber Reserve	456.39	10.86	6740	
34	Night, Lewis River	469.13	12.74	7600	
	Continental divide between Snake and Yellowstone rivers			7690	
35	Midday, "The Thumb," Yellowstone Lake	484.15	15.02	7675	
	Continental divide between Yellowstone and Shoshone Lakes			8365	El. 8345 mile post.

TABLE OF DISTANCES AND ELEVATIONS.—*Concluded.*

No. Camp	NAME OF CAMP	Distance from Sheridan	Distance from last reading	Aneroid Elevation	REMARKS
	Continental divide between Shoshone Lake and Fire Hole River			8305	El. 8240 mile post.
36	Night, Upper Geyser Basin	505.50	21.35	7275	
37	Midday, Nez Perce River				
38	Night, Norris, (Norris Basin)	537.51	32.01*	7255	*Distance from Camp 36.
39	Midday, Canon Hotel, Yellowstone Falls			7580	At road forks.
38	Second night, Norris	566.24	28.73	7390	Mile post 7680.
40	Midday, Mammoth Hot Springs Hotel	588.11	21.87	6800	

From the summit of the Big Horn Range the entire basin of the same name lies spread out before one, and on a clear day it is possible to trace the outline of the Shoshone Mountains on the opposite side of this basin, to follow the winding lines of the cottonwoods which fringe the Big Horn, Grey Bull and Shoshone rivers, and take in all the leading topographical features of a region as large as the State of Massachusetts. Notwithstanding its size the term "basin" is properly used, as it is an immense bowl entirely surrounded by lofty mountains. It has not, however, the appearance of a valley as that term is ordinarily used. The greater part of the surface is hilly and broken. Some of the bad-land ridges rise almost to the dignity of mountains and present a picture of aridity and desolation which disappoints and discourages many of those who visit this section for the first time. None of the broken country can be reclaimed. The limits of irrigation are restricted to the bottoms and table-lands which border the water courses. Outside of this the country is neither adapted to the construction of ditches nor fit for cultivation even if water could be carried to it.

The first stream reached after descending from the Big Horn Range was Paint Rock, which we followed down to its junction with the No Wood. No complaint of a scarcity of water was found on either of these streams, although we visited them at the season of shortest supply. A gaging of No Wood River, made below all ditches, gave a discharge of 109 second-feet. The acreage which can be reclaimed on either the No Wood or Paint Rock is so restricted that there is little danger of the over-appropriation of these streams. We gaged the Big Horn below the mouth of No Wood and found its discharge to be 1,800 second-feet, and then after traveling for fifteen miles through a broken, bad-land country which is doomed to perpetual aridity, we reached Otto on the Grey Bull River.

VALLEY OF THE GREY BULL RIVER.

The progress of irrigation in this valley has a special interest because it affords an answer to a question often asked —whether or not farming can be made a success in sections of the State remote from railways and where there is no local market for farm products. The nearest point in this valley is a hundred miles from a railroad station and a mountain range has to be crossed to reach it. The growing of farm products for shipment cannot, therefore, be conducted with profit, and the prediction has been made, every year since settlement began, that in another season or so the surplus would become so great that farm products would have no value. Thus far these forebodings have not been realized, as demands have grown more rapidly than the supply, and the price of oats along this river has averaged higher than the price in Chicago.

From the mouth of the river to the head of the highest ditch is eighty-six miles, and it is fourteen miles farther to the end of irrigation on Wood River, the principal tributary. The irrigable lands are confined to the valley of the stream, which is bordered, on both sides, by high bad-land ridges across which it is impossible to build ditches. Wherever these ridges approach the stream the extent of irrigation is restricted and where they recede it is increased, but the bottoms which can be watered are continuous, varying in width from a few hundred feet at the upper end to nearly seven miles at Otto, and ranging in elevation from 3,900 feet above sea-level at the mouth of the stream to 8,000 at the upper end. When I first visited Otto in 1892 there was one irrigation ditch adjoining the town and a few land filings had been made on the lower bottom along the stream, but in traveling up stream fifteen miles I did not see an acre of irrigated land. Since that time permits have been issued for eighty-eight ditches from the Grey Bull and nineteen from Wood River, and the unimproved and unoccupied land through which I journeyed in 1892 is now all fenced and in process of reclamation, although as yet not ten per cent. of the land under ditches is being irrigated.

The only extensive table-land along this stream has been segregated under the Carey Act. It contains about 30,000 acres and will, when reclaimed, be one of the finest bodies of farming land in the State. Two members of the original Greeley Colony, who have examined it, say that in soil and appearance it bears a marked resemblance to the original aspect of that locality. As yet it is nearly all open to settlement.

The oldest and best improved ranches are near the foothills. These were first taken up because the outside range rendered this region attractive to the early range stockmen. One of these gentlemen, Mr. Otto Franc, has over one thousand acres under ditches, and his ditches, ranch buildings and other improvements are of the most substantial character. He raises nothing but hay, and has some luxuriant fields of alfalfa and native hay. These meadows are well adapted, in their natural condition, to the distribution of the water, but he is re-grading them in order to bring their surface to a slope of mathematical accuracy, so the water turned out of the ditches will practically distribute itself. The cost of this improvement, it is estimated, will exceed $40,000.

About 100,000 acres are susceptible of irrigation from this stream. Twenty-eight thousand have been segregated under the Carey Act and nearly all of the remainder filed on under the U. S. Land Laws. About one-half of it is below ditches already completed. The cultivation of all this land would more than double the agricultural productions of the northern half of the State, and the question of what use could be made of its products is of considerable importance. In my judgment the solution is to be found in a closer union of the grazing and irrigable lands than has heretofore been possible. The Big Horn Basin supports thousands of cattle and sheep which now feed on the open range. Many of these die in winter from cold and starvation. A more humane and, I believe, more profitable system, will be to increase the acreage irrigated until the greater part of this range stock can be fed in winter. I know of no reason why sheep cannot be fattened with as much success and profit at Otto or Meeteetse as at Ft. Collins, Colorado, where this business has proved remunerative and where the growing of alfalfa is proving to be the best use which can be made of both high-priced land and costly water rights. At present agricultural production is far behind the demand. Much of the time we could not purchase oats at any price. For what we did secure we paid $2.00 a hundred. All the flour we bought came from Montana. So did the butter and eggs.

Some fears have been expressed that the water supply will prove inadequate. In 1897, the river was dry near its mouth the last of August. I do not share this fear. Enough water runs to waste in June to irrigate all the valley for the entire year. The seepage water from the small area now under irrigation is largely absorbed in moistening the unirrigated land that surrounds it. If all of the land under ditches was irrigated the subsoil would soon be saturated and the seepage water from irrigation in May and June would find its way back to the stream and be sufficient to meet the demand in July and August. As it is, wherever irrigated fields adjoin the river springs have appeared along the banks. The valley is so long and narrow that it is possible for the same water to be used three or four times before the mouth of the river is reached, while the steep grade favors its rapid return and lessens the loss from evaporation. I believe, therefore, that an ample supply is to be secured not by restricting ditches but by encouraging their construction on the upper part of the stream and arranging to use as much water as possible during May, June and the early part of July. Return waters from these ditches will be more valuable than the supply from the remaining snows.

IRRIGABLE LANDS ALONG WIND RIVER.

After leaving Meetëetse we traveled south for fifty miles over a country having little or no agricultural possibilities. The country is broken, the valleys are narrow and none of the streams crossed, except Owl Creek, have a perennial supply. This creek is at the southern border of the Big Horn Basin. It flows along the northern foot of Owl Creek Range, which separates the Big Horn Basin from the valley of Wind River, this river changing its name to Big Horn at the Owl Creek canon. The table-land on the south side of Owl Creek is of no value for agriculture because it cannot be watered. It is not worth much for pasturage. When we reached the river itself, however, the whole appearance of the country changed. Where we forded the stream at Crow Heart Butte the discharge was over 1,500 cubic feet per second, or more than double that of the North Platte at Orin on the same day. We crossed it several times during our journey up towards its head, and each time it was so deep and swift that fording it was an adventure.

This valley is now in an Indian Reservation. Nothing is being done with the irrigable lands and nothing will be done until the Indians have taken what they desire by allotments in severalty and the surplus is thrown open to settlement by white men.

Below the mouth of Bull Lake Creek the valley, on the south side of the river, is broad, and large areas can be brought under cultivation by the construction of expensive canals. Above that stream the valley is narrower and most of the irrigation will have to come from the tributary creeks. On both the upper and lower sections of the stream nearly all the irrigable land is on the south side. North of the river, badland bluffs and high ridges approach so close that nothing can be irrigated but the lower bottoms, which are quite narrow.

We were not able to examine the table-lands which border the base of the Wind River Mountains, but from the distant view which we had there appeared to be large areas well adapted to irrigation. These are crossed by Dinwiddy, Glacier, Meadow, and Willow creeks, and other tributaries of Wind River, which rise in the most elevated portions of the Wind River Range and furnish an ample and perennial supply for their complete irrigation.

West of the reservation the valley is from 6,500 to 8,000 feet above sea level and only hay and the hardier crops can be grown. All of the irrigable land has been filed on by stockmen and the greater part is now used for the production of native hay.

This was my second visit to Wind River. On neither occasion did time permit of the surveys or study which its agricultural possibilities deserve. While my conclusion is not based on specific data, it seems so well founded, and is so in accord with the views of others, that I feel warranted in expressing the belief that there is no stream in the State where a larger area can be watered at less cost.

From where the trail leaves Wind River to where we entered Jackson Hole is eighty miles. It crosses one of the wildest, least frequented, yet most historic sections of the State. Union Pass was the mountain thoroughfare of the early fur traders and explorers on their way to or from the northwest to the great interior basin of the arid region. For so noted a pathway it was a disappointment. How the earlier explorers could have followed so devious a course and ever reached anywhere is a constant surprise to me whenever I think of the twists and turns we made in following their trail. For twelve miles we followed the pathway of a tremendous ice field which, in ages past, plowed its way across this mountain, cutting out the notch now known as Union Pass. The miseries of that twelve-mile ride over a trail macadamized with rounded boulders, varying in size from an orange to a beer barrel, will long be with me. At its end there was not a wheel in either of our wagons which had not lost one or more spokes and two of the seats had been racked to pieces by the unending bumping they had received. Aside

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UNION PASS, WIND RIVER MOUNTAINS.

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from the physical discomfort the ride was of wonderful interest. We were on the crest of the continent. Majestic mountain peaks rose on every side. The Grand Teton, sixty miles away, piercing the clouds with its lofty spire, was a sight never to be forgotten, while down the sides of Mt. Union at our left ran the sources of the Colorado, Columbia, and Missouri, the three great rivers of the arid region.

On our way down the Gros Ventre we passed a number of placer ditches, and a short distance below the mouth of Bacon Creek found some miners at work. Their ditch was small and the gravel was being shoveled into the sluice box by hand, yet they stated they were making fifteen dollars a day. The importance of this road as a highway for tourists from the central and southern part of the State on their way to Yellowstone Park justifies its improvement. In its present condition the road is dangerous and that serious accidents have not occurred is remarkable. On several occasions we only escaped overturning by the slightest possible margin.

JACKSON HOLE.

Our first view of this valley was from the summit of the ridge which forms its eastern boundary. I do not think that Wyoming affords a lovelier prospect than the one spread out below and before us. What is known as the Hole is about forty miles long and from five to fifteen miles wide. It was formerly all under water, but the frowning walls of Snake River Canon show how it has been drained. At the north end Jackson Lake, twelve miles long and three miles wide, skirts the base of the Teton Range, which is the most impressive collection of lofty peaks and precipitous canons I have ever seen.

It is a misfortune that a region possessed of such attractions should be so cut off from the rest of the world. There are places in the State which can be left to solitude without loss to anyone, but a region which lies within a day's drive of Yellowstone Park and whose lakes and mountains are destined to make it one of the show places of the globe, ought to be filled with homes. The few who have crossed the barriers are pleased with their surroundings and all who have worked are prosperous. The elevation, 6,000 to 6,500 feet above sea level, will always prevent the growth of certain crops, but the hardier grains and vegetables can be produced.

In reply to my inquiries regarding this, Mr. Robert E. Miller, one of the earliest settlers and most prosperous ranchmen in the valley, furnished me the following statement of its products and possibilities:

> "The crops in this valley are principally hay—native, red top, timothy and alfalfa.
>
> "Potatoes are not a sure crop.
>
> "Rutabagas, turnips, carrots, parsnips, and cabbage are a sure crop; cannot estimate the yield per acre of vegetables for lack of experience.
>
> "Hay of all kinds can be raised successfully, averaging from one to two and a half tons per acre, owing to kind, season, and attention.
>
> "The future of our valley as a farming country is doubtful, as it has frosts every month in the year.
>
> "This valley is naturally adapted to cattle raising, being entirely surrounded by high ranges of mountains that cut us off from all outside ranges. The low lands are limited, our winters are long, requiring that all animals must be fed from ninety to one hundred and twenty days each year.
>
> "Then, with an unlimited summer range in comparison to the amount of low lands upon which must be raised the feed for winter, this valley raises Wyoming's best cattle."

The winters are severe. The snow fall is from two to four feet in depth and as there is little wind it covers the grass, and feed must be provided for all live stock from December to April. The open range industry as practiced elsewhere in the State is out of the question here. Cattle are principally fed on native hay, and the ease and cheapness with which ditches can be built make its production a simple and inexpensive matter. I am confident, however, that the future will see a greater diversity of products than now is thought possible. There is every reason to believe that winter wheat will do well. I saw some at Mr. Miller's of excellent quality. All kinds of small grain are grown in Star Valley, fifty miles further south, but at about the same elevation and with similar surroundings. At present the object of all farmers is to raise cattle to eat the free grass. It is the easiest and most profitable form of agriculture which can be followed and so long as this continues to be true other kinds of farming will be neglected. If, however, oats can be grown at all there is not a place on the continent where the crop will be more profitable. From the time our party left the Grey Bull River until we reached Yellowstone Park we were unable to buy, beg or steal a pound of grain to feed our teams. We were so greatly in need of it when we reached this valley that price would have been no object. It is already a great resort for hunters and in time will be for tourists. To care for them properly; feed for teams is as necessary as feed for men, and the farmer who will provide for meeting this demand has a bonanza.

We had for our first supper a six-pound trout caught in a brook in Mr. Miller's meadow. Later on we had elk steaks as a regular part of our bill of fare. On every side we saw evidence of the fact that we were in what was once the greatest home of large wild game on this continent. It was just at the close of the haying season and the immense stacks of hay were everywhere being surrounded by two parallel fences, each about eight feet high and the same distance apart. It was explained that these were necessary in order to keep elk from destroying these stacks in winter. A single fence would not suffice, but if they jumped one they would land between the two and be unable to escape. The necessity for this protection had been abundantly manifested the winter previous. It had been of unusual severity and thousands of these animals had been forced by starvation into the settlers' fields and corrals. In order to save enough for their cattle the settlers had to guard their hay stacks day and night. The elk which starved to death inside settlers' meadows were numbered by thousands. We saw hundreds of skeletons which attested the truth of this statement, and were told by one gentleman that he could take us to a point at which within a radius of fifty feet a hundred skeletons could be counted. We were shown the hide of a moose shot within a hundred feet of a settler's door. Notwithstanding the immense number of these animals which now exist, it was the conviction of all our party that unless some measures are taken to protect them from the wanton slaughter which is now going on, the day of their absolute extinction is near at hand. As we left the valley on the first of September, the first day of the hunting period, we met nineteen hunting parties in a half a day. There ought to be some place on this continent where large wild game will be preserved so that future generations may know something of the original life of this region. Nothing would be more to the future advantage of this State than to have such action taken at this time as would secure that preserve within its borders. The time is surely coming when an elk will be as great a curiosity as a buffalo now is and the opportunity to see them in their native wilds considered worthy a journey across the continent. It is my belief that all of the mountain country extending from the summit of the Wind River Range to the eastern base of the valley in Jackson Hole ought to be set apart at an early date as a National Game Preserve, and all hunting within its limits absolutely prohibited.

Last summer a part of this region was surveyed by Mr. J. Frank Warner. An extract from one of his letters, setting forth its resources, is given because it shows from personal examination that setting it aside as a game and timber reserve will not be to restrict our resources but in the end to add to the State's attractions and possibilities.

"Last summer I was engaged in subdividing a portion of the Continental Divide, which contains the head waters of the largest rivers of the arid region. Our surveys included the mountains which border the sources of Wind, Stinking Water, Yellowstone, and Snake rivers.

"All of these water courses run in narrow canons, the sides of which are covered by heavy growths of pine and spruce, with dense undergrowth, and covering the fallen and decaying growth of centuries. The canon walls rise abruptly in places 3,000 feet to timber line and from there over 2,000 feet farther. At the summit of these almost perpendicular cliffs are great mesas or spurs from the main divide. A view, in August, from the south end of these looking northward, discloses a bleak and extensive waste covered with banks of melting snow and ice, ranging in area from one to fifty acres.

"We saw evidence of several extensive forest fires, and from the settlers learned that they are prevalent during the summer months and, when once started, are only checked by the early snowfall. Wherever these fires have started they have been very destructive, consuming timber of immense value and tending to increase the torrential character of these streams.

"This region is a great game preserve. We saw numerous bands of mountain sheep. It is the breeding ground of deer, bear, moose, and many different varieties of small fur-bearing animals. Owing to the great elevation and consequent short summer season the country has little value for agricultural and grazing purposes. I believe the setting aside of a large area, which would embrace the Continental Divide and the head waters of all these rivers on either side, would be an important service to the state. It would preserve for future generations the large game of this continent which must otherwise soon become extinct. It would tend to restrict, if not prevent, forest fires and, from an agricultural standpoint, add more to the cultivated area than would be withdrawn by the creation of the reservation."

AUGMENTING THE WATER SUPPLY OF CRAZY WOMAN CREEK.

The holders of late rights to water from Crazy Woman Creek are cut off every year before the season for irrigation ends. This renders a number of ditches unprofitable and keeps a large area of land unproductive. In 1897 I arranged with Mr. Fred Bond, of Buffalo, to make a reconnoissance to determine whether or not the head waters of Ten Sleep Creek could be carried over the summit of the range and turned into this stream and to learn something of the water supply which could be secured in this way. Mr. Bond made the survey and an estimate of the storage capacity of Ten Sleep Lake. He reports the project of turning water over the divide is not feasible. It requires a ditch about fifteen miles long, of which a large part would be in solid rock. The building of a dam twenty feet high and 927 feet long at the outlet of Ten Sleep Lake will store 1,600 acre-feet. The scarcity of suitable material and the distance of this lake from supplies will prevent anything being done towards its improvement for many years.

RECLAMATION UNDER THE CODY CANAL.

To the Cody Canal Company belongs the credit of being the first company to reclaim land under the Carey Act in this State, if not in the entire West. During the summer I have recommended the patenting to the State of 10,000 acres of land under their canal. Not all of this has been cultivated, but a considerable percentage is now being farmed.

OBSERVATIONS OF DEPTH OF MOUNTAIN SNOWFALL.

The diagram, illustrating the variation in the discharge of the Laramie River, shows how wide is the range not only between different years but between the different months of those years. Experience has shown that there is a direct relation between the time when the winter snows fall and the volume of water available for late irrigation. If the bulk of the snow falls at the beginning of winter the flow of our streams is maintained much longer than where it falls at the latter end of the season. When it falls early the winds drift it into the canons, where it is protected from the direct rays of the sun and becomes compacted until it is almost ice. In this condition it melts slowly. Where it falls late it is soft and by spring has drifted but little. When the summer sun strikes it such snow soon disappears. A record of the time and depth of the snowfall on our mountain tops will, therefore, be of great service to our irrigators, as it will show them, before they begin to plant their crops, what are the prospects for a late water supply.

Through the interest of Senator Warren and the co-operation of the Weather Bureau a number of snowfall stations on the summits of our mountains have been established by this Bureau. Monthly records will be kept at these places and our farmers will be notified early in the spring what the results have been and what the prospects are. The continuation of these observations for a series of years will add much to the reliability of irrigated agriculture and enable our farmers to estimate very closely what their opportunities for the year will be.

IRRIGATION INVESTIGATIONS FOR THE DEPARTMENT OF AGRICULTURE.

Through the persistent efforts of Senator Warren and other friends of irrigation in Congress, a small appropriation was made at the last session for investigations on that subject by the Department of Agriculture.

Since July 1st I have been employed, as Consulting Engineer, in planning and carrying out the work provided for under that appropriation.

It is the purpose of this investigation to aid the state irrigation authorities in their work of framing and enforcing laws for the distribution and beneficial use of the rivers of the arid region; to help farmers in their efforts to secure the conservation and best use of that supply, and to collect and arrange the facts which will tend to promote wise legislation by Congress for the reclamation or disposal of the remainder of the public domain. It is a work in which I have long taken deep interest and the need of which cannot be overstated.

The history of all irrigated countries shows that wise laws do more for the prosperity of their farmers than a fertile soil or abundant water supply. The rapid settlement of the arid west, the separation of single drainage areas into different political divisions and the necessity of framing laws to meet emergencies before experience or study had shown what those laws should embrace, have created industrial and legal complications which threaten the stability and value of the irrigated farm and whose solution will require all the wisdom and patience of our ablest minds. The investigation of institutions inaugurated by the Department is destined, I am confident, to mark a new and better era of irrigation development for the arid states.

REPORT ON STREAM MEASUREMENTS

BY

C. T. JOHNSTON, Assistant Engineer.

Gaging stations have been maintained* during 1897 and 1898 on the Shoshone River, Clear Creek, North Platte River, the Laramie River at Uva and Woods, Green River, and on Black's Fork River.

In order to show the relative value of these streams as well as the wide range in their discharges in different years, a table has been prepared giving their run-off in acre-feet for each month of the irrigation season during 1897 and 1898..

Shoshone and Green rivers have their sources on opposite sides of the same mountain range. Atmospheric conditions affect the flow of the two streams similarly. This is distinctly marked, although the gaging station on the Shoshone River is at Lovell, within fifteen miles of the northern boundary of the State, and the station on Green River is at Green River, within thirty miles of the southern boundary. The discharge of the Shoshone River for May, 1897, was 490,000 acre-feet; for June, 308,504 acre-feet. The discharge of Green River for the same months of that year was 559,849 and 446,013 acre-feet, respectively. In 1898, for the same months, the Shoshone River discharged 250,637 and 435,323 acre-feet, and the volume of Green River amounted to 255,742 and 522,823 acre-feet.

It will be noticed that the year Green River is low the Shoshone is correspondingly low, and that if May is the month of maximum discharge on one stream it is so on the other.

These two streams maintain their summer's discharge longer than either the Laramie, North Platte or Black's Fork,

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* By the U. S. Geological Survey, as explained on page 57.

TABLE SHOWING TOTAL MONTHLY AND SEASONAL FLOW IN ACRE-FEET OF THE RIVERS ON WHICH GAGING STATIONS WERE MAINTAINED, FOR THE YEARS 1897 AND 1898

STREAM	Year	April	May	June	July	August	September	Octobe	TOTAL
Shoshone River	1897		490,000	308,504	143,471	42,669	21,384		1,006,028
" "	1898	44,609	240,637	435,323	233,759	43,000	19,424		1,016,752
Clear Creek........................	1897		20,295	16,602	5,503	3,332	1,960	2,026	49,718
" "	1898			32,160	11,780	2,948	1,318	2,087	50,093
North Platte River	1897	253,166	790,670	495,363	102,369	47,426	31,360		1,720,354
" " "	1898	102,940	385,037	333,193	67,725	33,329	26,126		948,350
Laramie River (Uva)	1897	8,639	117,968	91,634	19,366	6,944	3,437		247,988
" " "	1898	9,753	24,455	55,385	6,047	19	00	00	95,659
" " (Woods)........	1897	40,729	76,208	64,273	2,527	7,245	699		191,681
" " "	1898	4,762	23,919	37,885	1,740	o1	00	00	68,337
Green River	1897	118,764	559,849	446,013	177,048	103,880	50,738		1,456,292
" "	1898	162,728	255,742	522,823	278,336	92,167	56,422	46,132	1,414,350
Black's Fork River............	1897		243,782	77,374	20,453	8,780	7,231		357,620
" " "	1898	99,624	105,989	101,277	25,887	6,572	356	7,940	347,645

which rise in the lower mountains of northern Colorado and north-eastern Utah.

One remarkable contrast between the two rivers is in the rapidity with which fluctuations in volume occur. The discharge of Green River increases and decreases slowly, while the Shoshone River is constantly running from one extreme to the other. As an example, the Shoshone River discharged 6,512 cubic feet per second on May 27, 1898; on the following day the volume reached 14,710 second-feet, and fell on the 29th to less than 7,000. Even in the later months of the season this tendency is its leading characteristic. On the 2nd of September the discharge was 690 second feet. On the succeeding day it reached 1,660 second feet, and on the day following fell to 900.

The rise and fall of Green River is gradual and uniform. The discharge diagrams of this stream take the same form year after year, though the total discharge varies widely.

The gaging records of the North Platte River have been of unusual interest during the past two years. In 1897 the total discharge for the six months beginning April 1st was 1,720,354 acre-feet, or enough water to cover the State of Delaware one and one-fourth feet deep. This exceeds the run-off for any other year since the station was established. May was the month of greatest discharge, 790,670 acre-feet having passed the station at Orin during that time. The highest water ever recorded on the stream was 20,000 cubic feet per second, which occurred on May 27th. In 1898 the total discharge for the same six months amounted to 479,071 acre-feet, or about one-fourth that in 1897. May again was the month of high water, with a total volume of 194,453 acre-feet. The flow of the stream slowly increased from 600 second-feet on April 1st to 4,810 second-feet on May 25th, and jumped to 16,570 second-feet on the 27th. The transition to the low water stage was gradual, 600 second-feet being reached on July 30th. The minimum discharge occurred in September and was 420 second-feet.

On Clear Creek the same conditions exist as in former years. A measuring flume gives the channel a rectangular cross-section and a registering machine makes a continuous record of the depth. This enables the discharge to be ob-

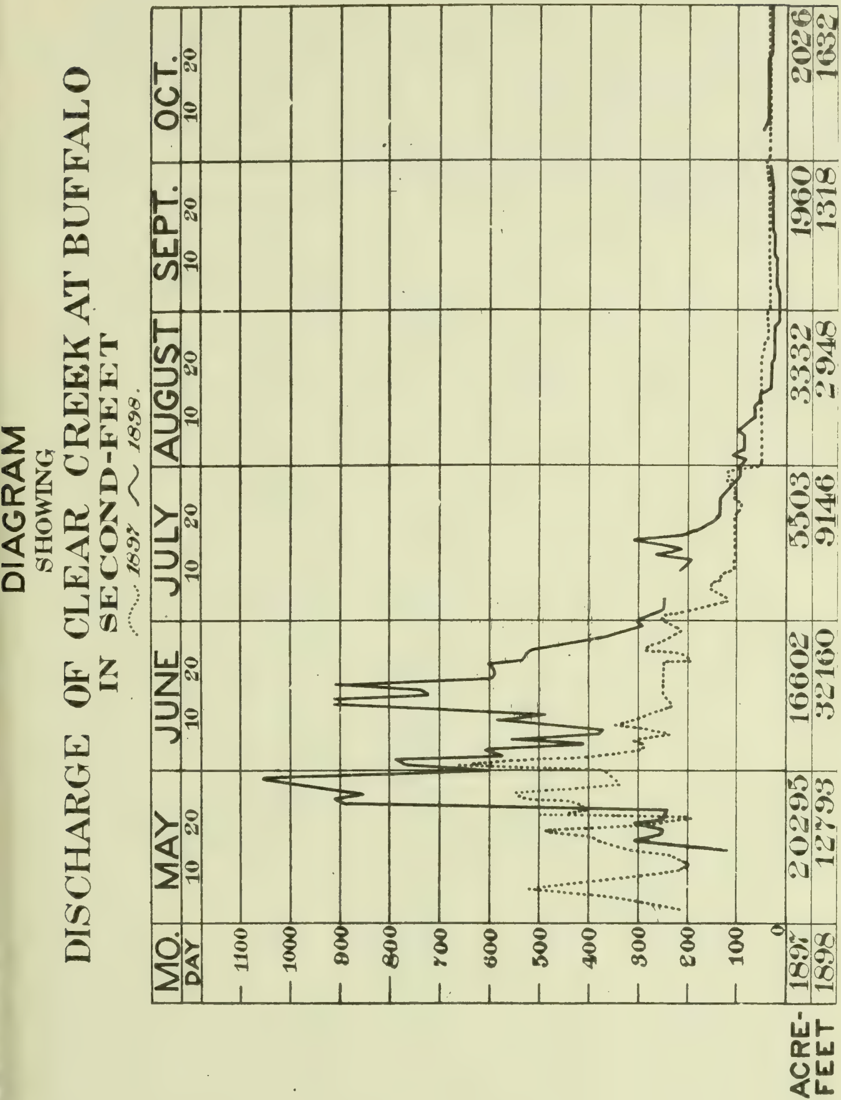


DIAGRAM
SHOWING
DISCHARGE OF CLEAR CREEK AT BUFFALO
IN SECOND-FEET
...... 1897 ～ 1898.

tained accurately, as all the fluctuations in depth are indicated on the record sheet.

While all other streams on which stations have been maintained were high in 1897 and low in 1898, Clear Creek reversed the order. Several times this year the depth was so great that the register failed to record it, and the flume was damaged by high water in July. The diagram for the two years shows the relative discharges during the six months beginning May 1st.

Like the Shoshone River, Clear Creek is subject to rapid changes in volume. Probably no stream in the State better illustrates the need of storage reservoirs. From June 25th to July 15th and later irrigation is most necessary. By examining the diagram it can be seen that the volume of water begins to decrease rapidly at about the time when it begins to be valuable. The irrigated land lies so near the source of the stream that as soon as the snow is exhausted on the lower mountains the effect on the supply is immediate.

Two stations have been maintained on the Laramie River. The upper one at Woods, near the southern boundary of Wyoming, affords a record giving the volume of water entering the State. The lower one at Uva is below all important diversions and gives approximately the water leaving the stream.

It will be seen by the table that the discharge at Woods is in excess of that at Uva for all months but August, when the latter station leads. In 1897 the excess at Uva in August was 301 acre-feet and in 1898 it was twelve acre-feet.

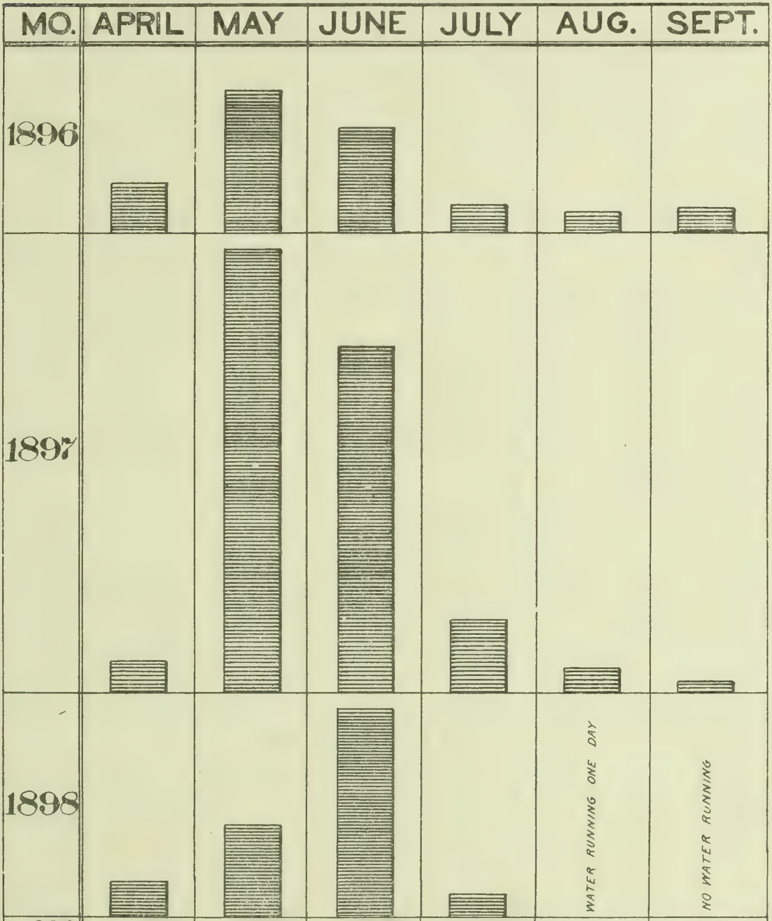
During September and October, 1898, no water ran at either station. This has occurred in no other year since the stream has been under state supervision.

The diagram showing the monthly and seasonal discharge of the Laramie River at Woods indicates how much the volume of water may differ in three successive years. While the discharges for April, July, August, and September do not vary materially during that time, there is no similarity in the volume of water in May and June. In 1896 and 1897 May was the month of greatest discharge, while in 1898 the volume in June was over twice that of May. The minimum observed

DIAGRAM

SHOWING THE MONTHLY AND SEASONAL VARIATIONS IN THE DISCHARGE OF THE LARAMIE RIVER

SCALE: 1 INCH = 50,000 ACRE-FT.



1896	13170	37996	27611	7803	5817	6890
1897	8639	117968	91634	19366	6944	3437
1898	9753	24455	55385	6047	38	0

discharge for June occurred in 1896 and the minimum for May occurred in 1898. The maximum discharge for both May and June occurred in 1897. Almost five times as much water entered Wyoming at Woods during May, 1897, as during the same month in 1898. The discharge for June, 1897, was over three times as large as that for June, 1896, and nearly twice as large as that for the same month of 1898.

The total discharge for each month, in acre-feet, is shown by the numbers under the diagram on the preceding page.

Even with a supply of 117,968 acre-feet of water in May and 91,634 acre-feet in June, 1897, the irrigators along the Laramie River suffered from drought. From a discharge of 2,635 cubic feet per second on June 1st the volume fell to 1,082 second-feet on June 21st and 585 second-feet on June 30th. On July 15th only 290 second-feet entered the State and by the end of that month the discharge had fallen to 170 second-feet.

Reports from the Wyoming Development Company at Wheatland are to the effect that irrigating did not begin there until June 20th and continued until September 15th, although the greatest demand on the stream was from June 20th to July 15th.

Of the total discharge, amounting to 247,988 acre-feet for the six months beginning April 1st, the irrigators received directly from the stream but 45,582 acre-feet, less evaporation and seepage. One reservoir constructed by the Wyoming Development Company had at that time a capacity of 10,000 acre-feet. This was filled from the flood water of May. The remaining 192,406 acre-feet ran to the Platte River and only added to the high water of the Missouri.

In April and May, 1898, a total volume of 116,927 acre-feet passed the Uva station. During that time the discharge at Woods was 128,607 acre-feet.

Although Black's Fork is not generally considered an important stream, in April, 1898, its volume was nearly twice as large as the North Platte River for the same month. During the remainder of the season the latter river was greater by only a third. Its volume averages from two to four times the discharge of the Laramie River. In May, 1897, Black's Fork discharged 243,782 acre-feet, while the Laramie River discharged 117,968 acre-feet. The ratio between the discharges decreased until July when they were nearly equal, then increased until in September the Laramie supplied 3,437 acre-feet and Black's Fork furnished 7,231 acre-feet.

In common with the Laramie and Platte rivers Black's Fork suffered extremely low water in September, 1898. No water ran in the stream at Granger from September 10th until October 2nd. The channel was dry below Ft. Bridger during the greater part of September.

TIMES OF MAXIMUM AND MINIMUM DISCHARGES.

TABLES SHOWING DATES OF MAXIMUM AND MINIMUM DISCHARGES IN 1897 AND 1898, WITH THE VOLUMES OF SUCH DISCHARGES IN CUBIC FEET PER SECOND.

1897.

NAME OF STREAM	Date of Maximum Discharge	Volume	Date of Minimum Discharge	Volume
Shoshone River	May 30	10,100	September —	360
Clear Creek	June 1	665	September —	33
North Platte River	May 27	20,000	September 16	500
Laramie River (Woods)	May 25	3,410	September 17	44
" " (Uva)	May 27	2,616	September 15	7
Green River	May 23	18,250	September 17	800
Black's Fork River	May 24	6,560	September 1	33

1898.

NAME OF STREAM	Date of Maximum Discharge	Volume	Date of Minimum Discharge	Volume
Shoshone River	May 28	14,710	September 28	20
Clear Creek	May 29	1,053	August 29	17
North Platte River	May 27	16,570	September 12	420
Laramie River (Woods)	May 26	1,545	August —	00
" " (Uva)	May 28	1,182	August —	00
Green River	June 27	15,100	September 29	670
Black's Fork River	April 10	2,495	September —	00

The table giving the dates of maximum and minimum discharges for 1897 and 1898, with the volume of these discharges in cubic feet per second, shows some interesting facts. In the State Engineer's Report for 1895-96 the following comment is made relative to the time of maximum discharge of the Laramie River at Uva and the North Platte River at Orin: "It is a coincidence worth noting that in both 1895 and 1896 the highest water at Uva, on the Laramie, and at Orin, on the North Platte, occurred on the same day of the month." (June 3rd.) This coincidence is almost as striking during 1897 and 1898, high water having appeared at Uva and Orin on May 27th, 1897, and on May 27th at Orin, and May 28th at Uva in 1898.

It will be seen that the high water at Uva is two days later than at Woods, that time being required for the flood to traverse the distance between the two stations—about 115 miles. This requires the water to have a mean velocity of 2.4 miles per hour, or 3.5 feet per second.

In 1897 high water was recorded at the seven gaging stations between May 23rd and June 1st, inclusive. In 1898 the flood water appeared first in Black's Fork on April 10th. The latest maximum discharge occurred on Green River on June 27th. The high water of Green River is usually later than on the other streams, although in 1897 it preceded them. In 1895 the maximum discharge occurred on July 1st and 2nd, and in 1896 on June 21st.

The flood waters on Black's Fork, however, came unusually early in 1898. In that year the high water of the five other stations appeared between May 26th and May 29th, inclusive. In 1898 the low water of all the streams gaged fell below that for previous years.

JACKSON LAKE.

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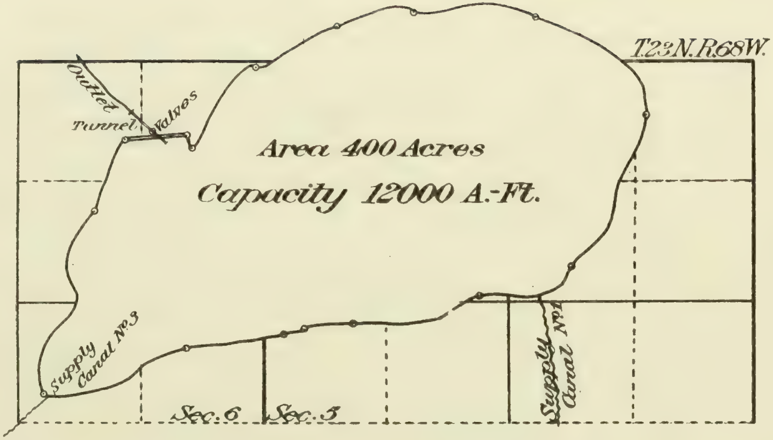
RESERVOIRS.

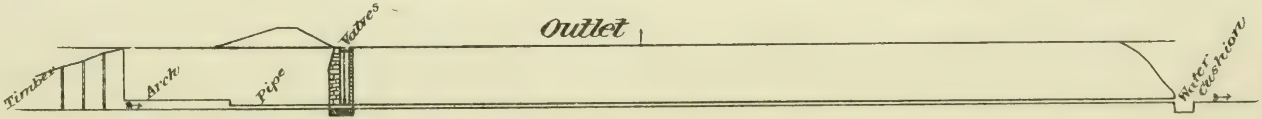
The following brief outline embraces some of the facts collected by me while making some surveys and examinations of reservoir sites in the southern part of the State.

RESERVOIRS OF WYOMING DEVELOPMENT COMPANY.

The first important attempt to impound the water of the Laramie River was undertaken by the Wyoming Development Company. Its Reservoir No. 1 is situated on the lands of the company some six miles southwest of Wheatland and a mile east of Sybille Creek. It is a natural depression containing approximately 400 acres and can be filled to a depth of thirty feet without any embankment. To improve this it was necessary to provide an outlet. This was made by cutting through the hill on the north side by means of an open cut 2,100 feet long and a tunnel 300 feet in length, the tunnel being under the highest part of the hill. The outlet gates are of iron set in concrete. Below this masonry are two riveted steel pipes, two feet in diameter and sixty feet long, which extend below the outlet gates and are then connected with two lines of vitrified pipe having the same diameter and extending to the lower end of the tunnel. This reservoir was put in use immediately on its completion and has stood for two seasons without any repairs or difficulties in operation. The entire cost of the stored water was only fifty cents an acre-foot.



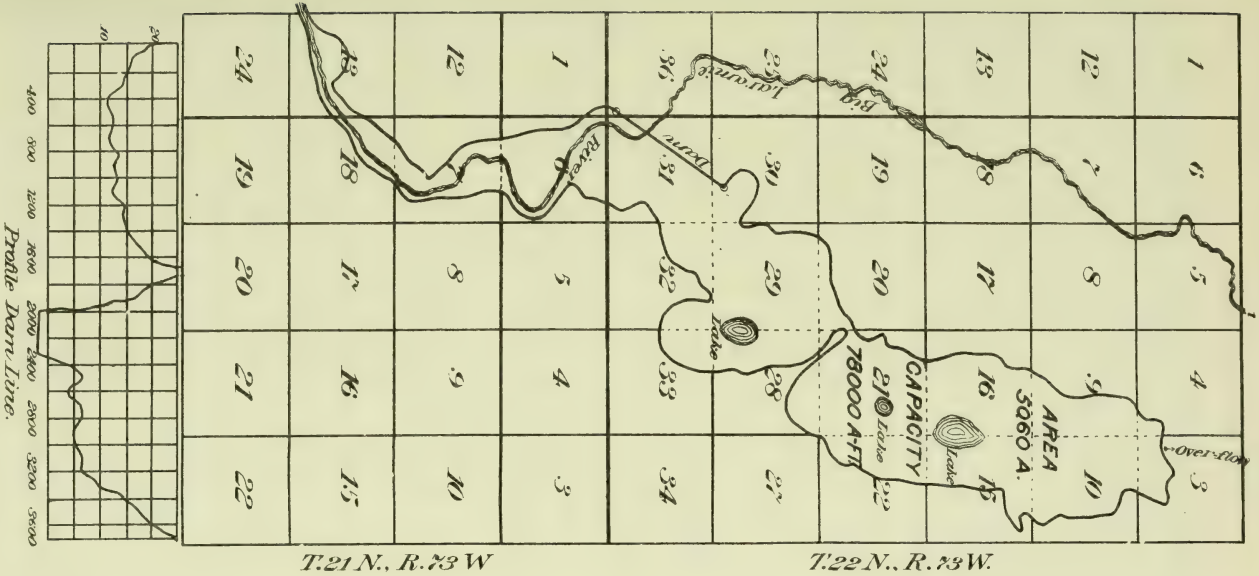
OUTLET—Length of open cut	2,100 ft.
Length of arch	50 ft.
Length of double steel riveted pipe	60 ft.
Length of double vitrified pipe	390 ft.
Diameter of all pipe	2 ft.



THE WYOMING DEVELOPMENT COMPANY'S RESERVOIR NO. 1.

Cost of Outlet, $5,000.00.

Cost of Reservoir, per Acre-foot, 50 cents.



THE WYOMING DEVELOPMENT COMPANY'S RESERVOIR NO. 2.

Length of Dam, 1 mile. Maximum Height, 30 feet. Cost, per Acre-foot, 83 cents.

To build dam requires—270,000 cubic yards earth, @ $0.10 per yard	$27,000
12,420 " " stone rip-rapping, @ $1.00 per yard	12,320
Masonry, gates, engineering, and supervision	25,680
Total cost	$65,000

RESERVOIR NO. 2.

The same company proposes to build another and much larger reservoir by utilizing a natural basin on the Laramie Plains. By turning the river into this basin and filling it to a depth of fifteen or twenty feet it can be made to store 78,000 acre-feet, or over half the average yearly flow of the stream. In order to improve this reservoir it will be necessary to build a dam across the channel of the river. The plans provide for a dam of earth except where the outlet gates are located, where concrete will be used. On the north side of the dam is a low rock ridge through which the waste-way will be cut and over which the surplus water of the river will run when the reservoir is full. The accompanying diagram gives the location and size of the projected work.

HORSE CREEK RESERVOIR.

Surveys and plans for a reservoir on lower Horse Creek were filed during the past year. It contemplates a dam 96 feet high and 1,200 feet long in the channel of the stream. This reservoir would have a surface area of 325 acres and a capacity of 18,000 acre-feet.

STATE SURVEYS.

In response to a number of urgent requests from appropriators on different streams I made a number of preliminary surveys to determine the possibilities of storage on streams where a short water supply makes this of unusual value. One of the sites examined was on Chugwater Creek, eight miles west of Iron Mountain. This site is located between two parallel hog-backs which run north and south. The plans for this provide for an earthen dam 570 feet long, with a maximum height of thirty-five feet. The eastern end of this will abut on a ridge in which an overflow channel can be cut through the solid rock. The accompanying map shows the plan of dam and estimated cost.

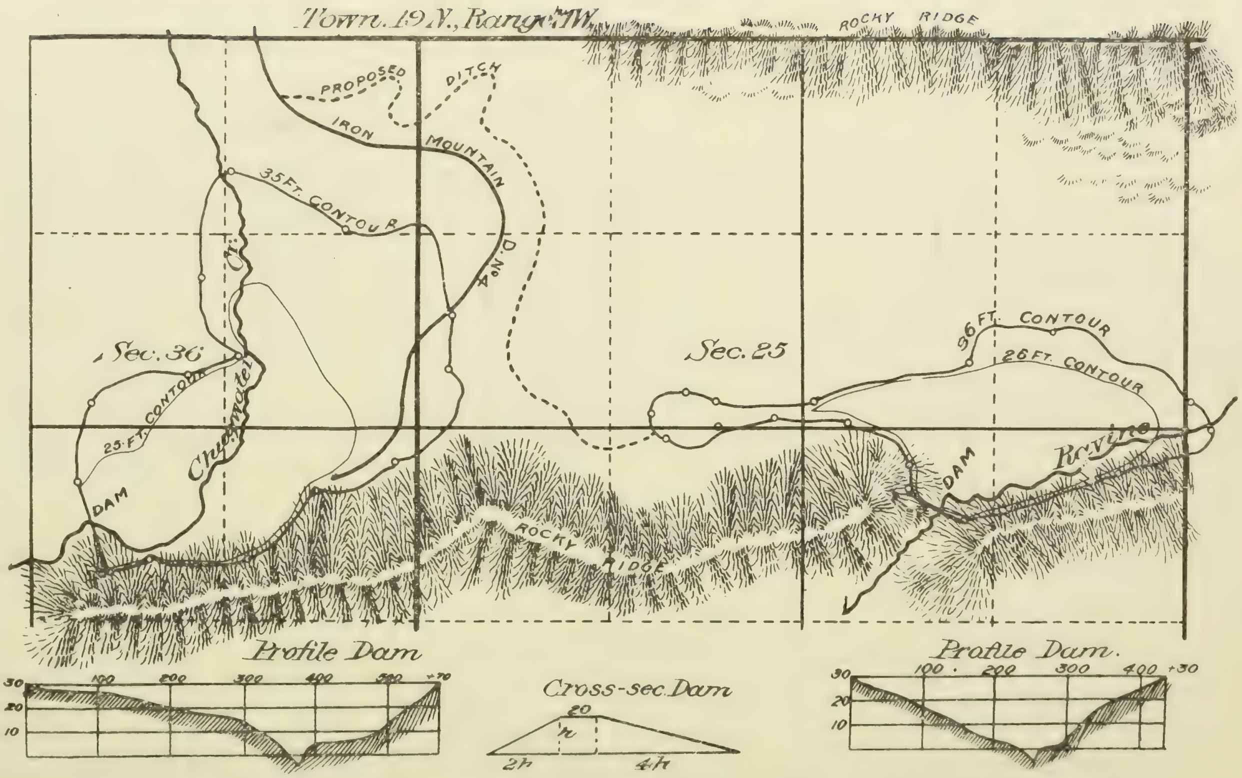
RESERVOIR NO. TWO.

Another reservoir can also be built on this stream north of the one described. This will require a dam 430 feet long and 35 feet high. Each end of this dam will abut against solid rock, in which a spill-way can be made at small cost. The accompanying map shows the area and capacity of this reservoir.

The northern reservoir contains a pond which now holds water throughout the year. This indicates that there would be no serious loss through percolation.

RESERVOIRS ON BLACK'S FORK CREEK.

There is probably no stream in the State on which reservoirs will render greater service or in time be more needed than on Black's Fork Creek. An immense volume of water runs to waste in the early part of the season and there is usually a shortage during the latter half. At the head of the stream are a number of mountain lakes which all accounts agree are well adapted to storage of the surplus water supply. It had been intended to examine those, but an early storm coming at the time of our visit, in September, this part of the trip had to be abandoned. The site surveyed is located eight miles northeast of Ft. Bridger. It lies on a rolling table-land a short distance below the line of a canal which is now being constructed and which is intended to water a large body of land. The contours of the reservoir show the rolling and broken character of the country in which the basin is situated. While the thirty-foot contour only incloses 1,088 acres it is seven and three-quarters miles long. The capacity of the reservoir when filled to this depth will be 14,219 acre-feet. This would require a dam 1,880 feet long, with a maximum height of thirty-six feet. To build it of earth will require 260,000 yards, with 6,000 yards of stone for rip-rapping. The estimated cost of improving this reservoir is $37,000, or $2.65 an acre-foot.



*See foot-note, opposite page.

THE CHUGWATER RESERVOIRS.

†See foot-note, opposite page.

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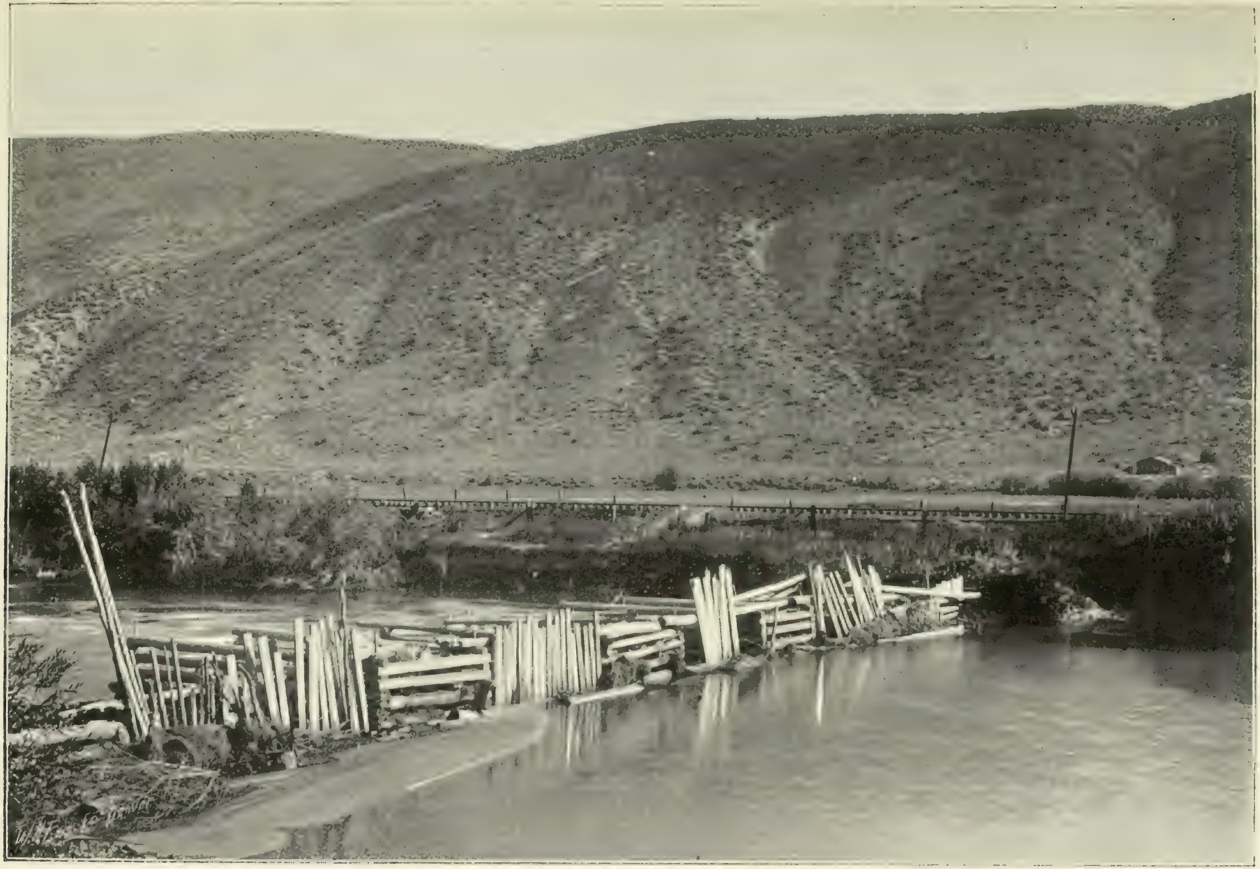

HEADGATE AND DAM, WYMAN & IRWIN CANAL.

For a number of years requests have been made for a division of water among appropriators on Bear River, but the fact that the stream rises in Utah and crosses the State boundary a number of times gives rise to inter-state water right questions which seem to make any division between appropriators in this State out of the question. An examination of the stream made for the United States Department of Agriculture in September showed that the irrigators along this stream are quite prosperous, and that over 17,000 acres have been brought under irrigation. In addition to the land now under ditches there are two projects which, if carried out, will greatly increase the reclaimed area. By enlarging the ditch, which crosses the divide into the drainage of Sulphur Creek, a broad, gently sloping valley seven miles long and from one to two miles wide can be brought under cultivation. This will doubtless soon be done, as the ranchmen who are now living there are quite prosperous. Five miles below this water can be taken across another divide into the valley of Yellow Creek. The construction of this ditch is somewhat expensive and it has been abandoned for the present. Its completion would bring about 12,000 acres of land under the ditch. Our examination showed that the volume of water carried by Bear River is much smaller than Smith's Fork, one of its tributaries, and that so far as the inter-state question is concerned it is of local rather than general interest, Smith's Fork turning much more water out of the State than Bear River brings into it.

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*Area, 94 acres. Capacity, 1680 acre-feet.

To build dam requires—37,240 cu. yds. earth, @ $0.10 per yd....	$3,724.00
1,830 " " stone, @ 1.00 " "	1,830.00
Outlet pipes and gates in place..............	400.00
Engineering and supervision	300.00
Total..	$6,254.00

Cost, per acre-foot, $3.72.

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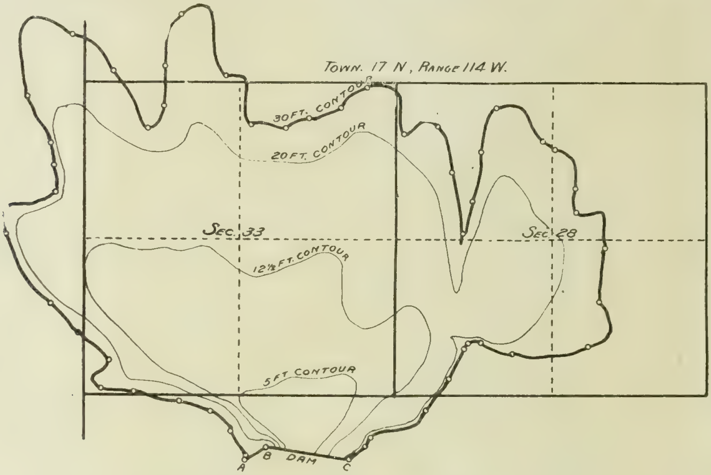
†Area, 62 acres. Capacity, 1000 acre-feet.

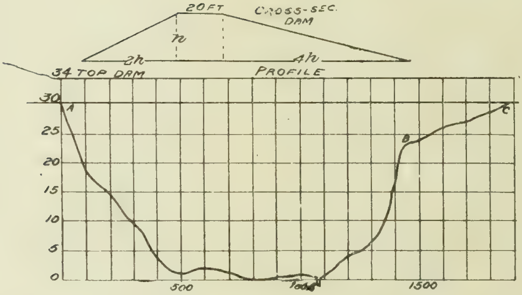
To build dam requires—28,028 cu. yds. earth, @ $0.10 per yd....	$2,802.80
1,382 " " stone, @ 1.00 " "	1,382.00
Outlet pipes and gates in place..............	400.00
Engineering and supervision	300.00
Total..	$4,884.80

Cost, per acre-foot, $4.88.

Two miles below Cokeville is the headgate of the Wyman and Irwin canals, which is of so much interest that an illustration has been prepared. This dam and headgate consists of a series of rock-filled cribs placed across the stream, through which the flow of water is regulated by two inch planks resting against a timber running across the top and being driven into the sediment in the bottom of the river below.



THE FT. BRIDGER RESERVOIR.



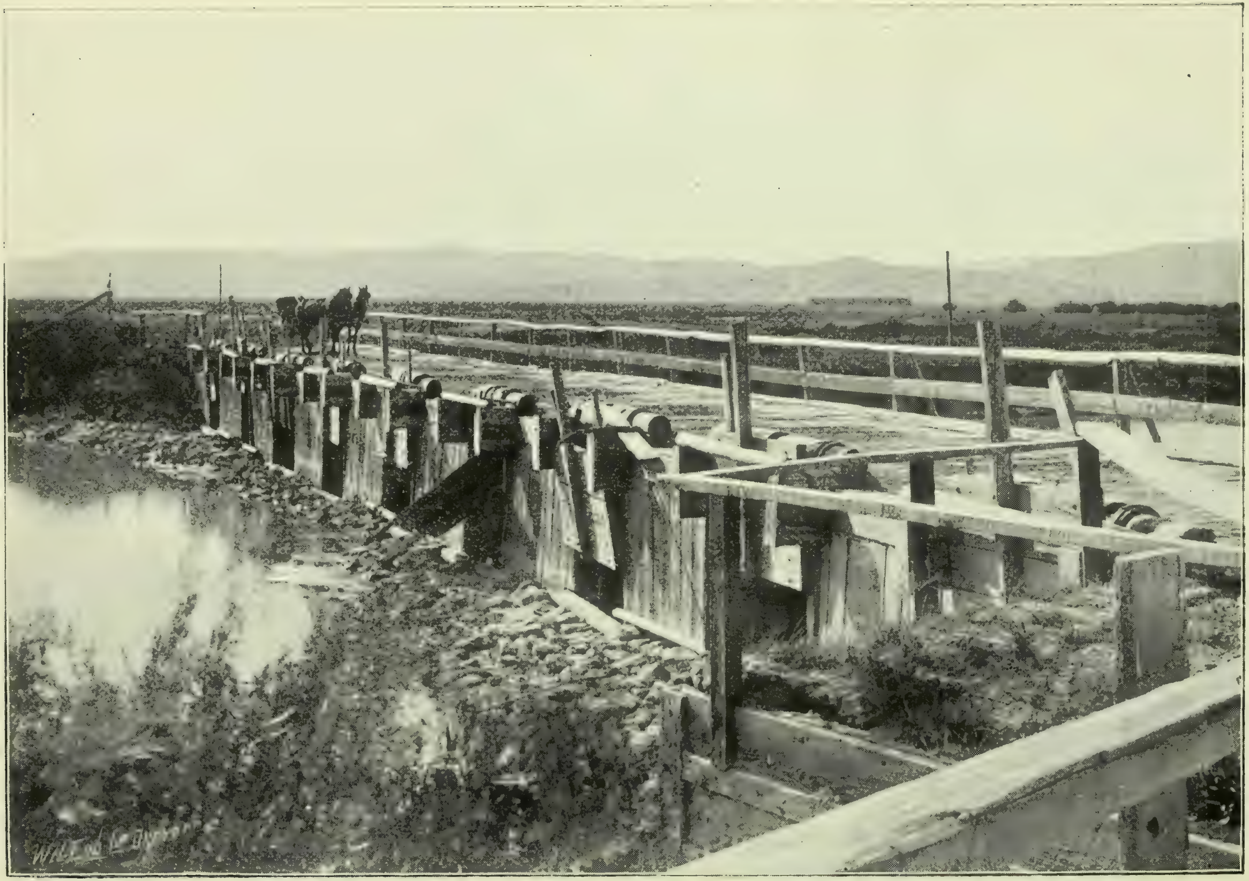
AREA

1,088 Acres.

CAPACITY

14,219 Acre-feet.

The greater number of the ditches along the river have no dams whatever. The best one seen is at the head of the canal of the Beckwith Company. It forms both headgate, dam, and bridge across the stream. The illustration shows its construction and general appearance.



HEADGATE AND DAM, BECKWITH & CO. CANAL.

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SELECTING STATE LAND.

LEASING GRAZING LAND.

For the past four years the Land Board and Board of Control have been engaged in the selection and lease of the land given to the State. As a result of their harmonious efforts the income of the State from rentals has been increased over $40,000 a year, or over $100 a day. In addition, a considerable increase in our taxable property has resulted from the improvements on leased lands. Every dollar of this increase has, to that extent, lessened the drain on taxpayers' pockets, for the money has all been applied to paying the running expenses of the State and of schools.

In selecting these lands it has been the constant endeavor of the Board of Control to do as much good and as little damage to those now using the range as possible. From the scores of letters received at this office we are warranted in believing that the protection afforded settlers has been of as much value to the State as the returns from rentals. By giving them control of small tracts of grazing land adjoining their ranches they can care for their farm animals at less cost, can raise blooded stock which they could not do on the open range, and by keeping their cattle and horses near home can take away the risks and lessen the losses inseparable from turning them loose. Nor have we been unmindful of other interests. We have endeavored to give security and stability to the industry of sheepmen by selecting lambing grounds, where applied for, and in selecting the ranges used by resident cattlemen. The individual selections have been small, averaging much less than 1,000 acres. This has entailed much more labor and expense on both Boards, but we believe the greater number benefitted made it the correct policy. To do this applications for single leases of 100,000 acres, where the rental of $5,000 a year was guaranteed, had to be refused in order that the land available could be made to satisfy the requests of the hundreds wishing smaller areas. By cutting down the areas applied for, and because of our inability to select any land for some applicants, the Board has rejected many more acres than were recommended.

After the original grant was exhausted Governor Richards secured for the State indemnity lands in place of the school sections in Yellowstone Park and the Shoshone Indian Reservation. These were the last to be selected, but they also are now exhausted and, outside of school sections, the opportunity to secure pasture lands depends on further action by Congress.

Aside from my desire that any one wishing to control his home range should have the chance to do so, I am relieved that the Board of Control is to have a rest from the anxiety and controversies inseparable from making these selections. No matter how well performed, it is a disagreeable duty. Whoever is charged with its performance soon learns that criticism is certain and commendation rare. I am able to comment freely in regard to this, because the burden of this work has fallen on the Division Superintendents. I have personally made very few selections, not to exceed 30,000 acres in the past four years. I have, however, known of the labors and perplexities of the Superintendents and deem it only a duty to express my high regard for their conscientious, fearless, and efficient work.

It was impossible to please all. To select an acre of land was to antagonize those who wish it all to remain an open free range. Regarding it as a part of our official obligation to obtain good land, with a permanent rental value, we had to select tracts that were already being grazed over by range flocks and herds. To find pastures which some one would pay for if selected, but which no one was using when it was free, was a pretty difficult undertaking, while to interfere with some one's free range was a crime of peculiar attraction to the political demagogue. Any one with talent enough to do his duty toward the State and not run against the champion of free range need not remain on the Board of Control. He can find less exacting and more profitable employment elsewhere.

DO STOCK MEN AND FARMERS DESIRE TO LEASE THE RANGE THEY USE?

When the efforts of Governor Richards to secure indemnity lands for the State in place of the school sections in Yellowstone Park were successful, I determined, before the Board began the location of these sections, to find out what were the views of irrigators on the leasing proposition. There were already on file hundreds of letters from settlers asking for the selection of lands and saying that they must have control of some outside range or give up their homes. These, however, were from one side. I wanted the views of people who had not applied for land and those who were opposed to the State owning any.

In order to get an unbiased expression of opinion I decided to take two or three streams in each county in the State and mail an inquiry to each recorded appropriator of water on them. To do this I had printed on between six and seven hundred return postal cards an outline of the recommendations of my last report, with a request for a statement of their opinions on the return half. The postals were sent out by my assistant, who took the records of water rights as a mailing list and paid no attention to whether the views of the parties addressed were or were not already known. The following is a copy of the statement and questions printed on the cards sent out:

CHEYENNE, March 1st, 1898.

MR...

The last report of the State Engineer's Office advocated a grant of *Five Million Acres of Pasture Land* to the State and the leasing of the same to settlers under the following conditions:

Each settler, or irrigator of a homestead, to have the right to lease four sections, or 2,560 acres.

No one to be permitted to lease more than four sections.

Each settler to have the first right to lease the grazing land adjoining his ranch, if he so desires.

The leasing price to be a fixed sum. *One Cent an Acre is the Rate Recommended.* (State Engineer's Report for 1896, pages 28-35, 158-167.)

A grant of this size would absorb about one-tenth of the public grazing land in Wyoming. It was recommended that the rentals be used to aid in building reservoirs and extending irrigation.

I wish to know whether these recommendations are in accord with your needs or with your views of the needs of farmers and ranchmen.

If they are not, I wish to know wherein they are wrong. Do you use the range? If so, I want the benefit of your experience in determining how it can be managed so as to make your use secure and add to the value of land irrigated.

Please reply to the annexed questions and if they do not cover the ground, write and give me your opinion of what should be done with the non-irrigable pasture land. I shall tabulate and file all replies and endeavor to state fairly their conclusions without regard to whether or not they agree with my own.

Respectfully,
ELWOOD MEAD,
State Engineer.

Do you use the open range?

Ans. ....

If so, state what kind of stock you range thereon.

Ans. ....

Would the right to lease part of the contiguous range benefit settlers?

Ans. ....

What limit, if any, should be placed on the number of acres a settler could lease?

Ans. ....

Should the land be leased at a fixed price per acre? If so, what rate would you recommend?

Ans. ....

If the State were given five million acres of pasture land to be leased to settlers, what should be done with the money received from rentals?

Ans. ....

Do you favor such a donation under the conditions recommended in the Engineer's report?

Ans. ....

Replies were received from three hundred and thirty-two parties, or more than half of those addressed. With the exception of one anonymous reply, all the answers discussed the question with a seriousness and candor which were gratifying. Fifty-eight wrote letters explaining their views at greater length than the card permitted. These letters are worthy of study, as they present all phases of the grazing land problem from the standpoint of the experience and interests of those who use the land.

As the letters and cards came in they were filed away until the final tabulation.

Summary of Replies to Inquiries Concerning Grazing Lands.*

COUNTY	Total Number Replies on Cards	In Favor of Leasing System	Opposed to Leasing System	Number Using the Open Range	Number Not Using the Open Range	Limit of Leasing Area Recommended		Use of Proceeds Recommended				Rental Price Recommended	
						Four Sections and Less	Over Four Sections	Irrigation	Schools	Roads	Other Purposes	One Cent	Over
Albany	6	5	1	3	2	1	1	3	1			3	
Big Horn	3	3		3		1	1		1		2	3	
Crook	9	7	2	9		7		2	2		4	3	2
Carbon	36	27	9	34	2	24	1	19	3	1	5	26	2
Converse	71	68	3	69	2	55	5	32	5	1	21	59	3
Fremont	19	19		18	1	18	1	11	3		5	11	2
Johnson	12	11	1	10	2	11		10				7	1
Laramie	27	27		24	3	17	4	15	2	1	7	11	2
Natrona	14	13	1	14		10		10	1		2	12	
Sweetwater	1	1		1				1				1	
Sheridan	42	34	8	36	5	38	3	21	5	1	6	11	16
Uinta	12	12		12		8	2	7	4	1		12	
Weston	2	2		2		2		2				2	
Post Office not given	20	16	4	20		13		10		2	4	12	6
Letters	†58	48	6										
Total	332	293	35	255	17	205	18	143	27	7	56	183	34

*The totals for the different inquiries do not agree as many did not reply to all the questions but only to those in which they had an especial interest.

†Four replies non-committal.

An examination of the summary will show that 293 of these replies were in favor of and only thirty-five against a leasing system, or more than eight to one. Of those who wrote letters there were also eight in favor of leasing to every one against. Those who favored applying the proceeds to extending irrigation outnumbered all others combined. Storage reservoirs were regarded as an especial necessity by a majority. A low rental and restricted area are both popular, one cent an acre and four sections each having a majority of the replies.

The importance of this subject and the interest of the letters would justify publishing the entire collection. Instead I have selected some representative ones which cover the ground. I have in each case given the post-office address, but omitted the writer's name. The letters are, however, a part of the public records of this office and can be seen by any one who desires to read them. In selecting them I have given three of the six which opposed leases and eleven of the forty-eight in favor.

OPPOSED.

"Lusk, Wyo., March, 1898.

"Mr. Elwood Mead,
Cheyenne, Wyo.

"Dear Sir:

"Your card of 1st inst. has been received, and I have replied to your questions on card and will post the same to-day.

"Since you invite me to do so, I will give you my ideas in regard to the public grazing lands of this State, and hope you will not feel hurt if they are not in accordance with your own.

"Perhaps the conditions surrounding us and our ranch are different from those of many other ranchmen. However, some, or many, of the same conditions must exist elsewhere as here.

"In this locality we have quite a settlement of farmers and small ranchmen, and I am sure that all of those that engage in raising stock on the open or *free range* are doing well and making good homes, and are good citizens. The tillers of the soil are not doing much, and all are gradually getting together small herds. This is as it should be for the prosperity and good of this country. All that have expressed themselves to me in regard to free and open range prefer to leave the title to the public grazing lands in the United States, and I think it eminently better.

"We have in this locality, as a precedent, the Spaugh and Hord tract of State land, at present all controlled by Mr. A. A. Spaugh*; lying in one solid body of many thousand acres with many small springs and streams, with beautiful places for homes and small stockmen, all of whom have been "frozen out and cleaned up," as Mr. Spaugh expresses it; extending north and south a distance of fifteen or twenty miles and more than one-half that distance north and south, without a road or cross-road cutting through it. Notices are posted warning stockmen and settlers from camping or driving through the premises. Mr. Spaugh and others owning or controlling such tracts can drive or feed their stock where they please over the public range, lock their gates, and declare themselves autocrats. In the place of one man living on this tract of land, running foreign stock to suit his own convenience, we might have twenty good families with homes and small bunches of stock, good citizens and tax-payers. Under your proposed plan it would become necessary for each and every settler to lease the four sections adjoining his claim, lest his neighbor might do so. If you only absorb one-tenth of the free range, that would leave nine-tenths for the settlers to quarrel over, and would only furnish fresh reason to aggravate the fight, besides giving companies and individuals an opportunity to obtain control of large tracts. Situated as we are we could not run any number of sheep on the four sections unless we could get out to the free range.

"Wyoming is essentially a grazing country, and her greatest wealth lies in the free and unlimited use of the open range. She has not so many resources that any can be ignored; *all*

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* Since this letter was written the lease referred to has expired and has not been renewed. Ranchmen can now lease this land in small tracts if they so desire.

ought to be fostered. Itinerant sheep men are not always pleasant, but they save the grass in the most remote places when the snow is on the ground, and the sheep business is one of our best industries. It takes large pastures to run small herds, and no man would like to be restricted to two or three thousand acres, nor can he make a living on a thirty-acre fruit farm as in Utah. It is quite different from an agricultural country. Would the settlers of this locality like to pay an annual rental of one cent per acre and have the money invested by the State in an irrigation plant in the Big Horn Basin? I think not.

"Perhaps I have already said too much, but certainly not but little that *might* be said against this land scheme. I think as much of irrigation and reclamation of the land as any one can, but unless there is money in it for capitalists (and they are looking out pretty sharp for such things) certainly there is none for a state. *Give us good wide roads* across the State, let the range be *free*, and let the settlers acquire what lands they need or can get under the existing laws, and you will do us the most good.

* * * *"

"SHERIDAN, WYO., April 10, 1898.

"MR. ELWOOD MEAD,
Cheyenne, Wyoming.

"DEAR SIR:

"Replying to your circular letter of March 1st, I can only answer from my own selfish standpoint. My ranch is located five miles from Sheridan. I had a good location to handle cattle had the range remained open. I could only secure eighty acres under the lease of state lands. I am surrounded by settlers except on the west, where I secured the eighty-acre tract. Then the county road cuts me off from any further extension. I consider in my case it has been the means of depreciating the value of my farm. The wealthy class have profited by the deal at the expense of those similarly situated to myself. Now I do not say this in a spirit of criticism toward those who have more of this world's goods than myself, for I am far from being a 'Populist'. I would have been glad to have secured 640 acres adjoining my place. This was impossible, owing to my peculiar location.

"If the range was open I could let my cattle run. Now the range which I could have used is fenced, and as I believe a great portion under a pretended lease. It is generally conceded here that parties have fenced a good deal more than they have leased.

* * * *"

"COLLINS, WYO., March 11, 1897.

"MR. ELWOOD MEAD,
Cheyenne, Wyoming.

"DEAR SIR:

"Do you use the open range? I do. Cattle and horses. With regard to leasing range, I don't think it would be of any benefit here. I think it would be a great detriment to poor men settling the country.

"The first land to be leased would be the best agricultural land, as the land is all counted arid land in this country. In regard to the limit, if there was such a law, I think the amount each man had ought to be cut down to about two sections. Where it was convenient I should think there had ought to be an open thoroughfare.

"Should the land be fixed at fixed prices?

"I think the Board should have that authority, as some land is worth a good deal more than others.

"In regard to what use the money should be, I think it would be a good idea to put the use of schools and the use of fixing the county roads, as the cost of building irrigating canals is too great for the State to undertake. And as the whole it be a detriment to the general welfare of the public as no man coming in would want to build irrigating canals on leased land. No man that wishes to see the State a prosperous farming community could ever sanction the leasing of our lands to the present settlers.

* * * *"

IN FAVOR.

"LANDER, WYO., March 17, 1898.

"HON. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyoming.

"DEAR SIR:

"In replying more fully to your card of 1st instant, which I herewith inclose, I would say that your plans for the leasing of pasture lands that may be granted to the State, are very good, as it will secure every settler owning a homestead or, as I understand it, every farmer (whether he got title to his land under the homestead or other laws, or by purchase) in the right to sufficient range to maintain a small herd of stock. It will require about thirty acres of the average range of this State to support one animal, *i. e.* a cow or horse, so that if each farmer could get the lease of 3,000 acres he could keep at least 100 head of cattle by raising some hay to feed through the severe part of the winter, while without the security of such a right the stock business with a farmer whose time is taken up on the farm is rather risky, as all the range within easy reach of his home may be taken by range herds of sheep, cattle or horses; though resident owners may in a measure respect each others' rights, the owners of herds driving from one county through others or coming in from other states are generally not very careful about anything except to evade taxes. By all means the rate of rent should be fixed on lands leased to farmers contiguous to their homesteads, as to let it at the highest bid might work a hardship on those with small means. I think one cent per acre is reasonable enough. Should the State have more land to lease than that taken by actual settlers or land owners, or rather in excess of the amount allotted and reserved to them, it might be rented to the highest bidder without impairing the rights of of any one.

"I think one-half of the proceeds from the rent of such lands should be used for the support of the common or public schools of the several counties of the State, each county to receive one-half the rentals from the lands leased within its boundary. This would reduce the county taxes as well as to aid the interests of education, and as the farmers in general have families and children to send to school it would be an incentive to them to lease the land. The balance could no doubt be used to the best advantage in building reservoirs and extending irrigation, as it would be adding to the permanent growth and wealth of our State.

* * * *"

"SARATOGA, WYO., March 3, 1898.

"STATE ENGINEER,
Cheyenne, Wyoming.

"MY DEAR SIR:

"I am in receipt of your favor regarding public range. I am a sheep owner and use the public range; am also a Platte Valley ranchman of twenty years' location. I believe the right to lease contiguous range would benefit a large majority of our people outside the towns, provided it could be pro rated in a fair manner—one cent per acre being a fair rental, the money to go to building storage reservoirs. I certainly favor a donation to put this scheme to the test as soon as possible. Allow me to say that our people have followed your official course with great interest, and I have not yet met a ranchman unwilling to trust the framing of future land and irrigation laws to your hands.

* * * *"

"DAYTON, WYO., March 5, 1898.

"STATE ENGINEER,
Cheyenne, Wyoming.

"DEAR SIR:

"I haven't seen your last Report advocating a grant of five million acres of pasture land to the State and leasing the same to settlers. Would say that the limit of *four sections* is a good one where there is plenty of land, but in settlements one man might lease land adjoining him and go all around his neighbor. In case of that kind each one should be notified and each one have a right to lease part of the land adjoining him at a fixed price—one cent per acre, as you recommend. The expense of rent and fencing could not be much more than the expense of rounding up and branding on the open range and the loss would be much less, for the settler would have his stock where he could tend to their needs where he otherwise would lose them on the open range, to say nothing of the loss by theft. I favor the recommendation of the rental be used for the promotion of irrigation. The State would be able to give employment to a good many idle men and the water would cost the settler less than if owned by private companies. There would be no direct conflict of interest.

"Yes; I favor the grant of five million acres to the State by the Government, and believe it will be of benefit both to the settler and the State.

* * * *"

"Casper, Wyo., March 14, 1898.

"Elwood Mead, Esq.,
Cheyenne, Wyoming.

"Dear Sir:

"I quite concur with you in your views of the range business and the leasing of the grazing land adjoining one's homestead, etc. I am in favor of leasing and will lease if I can get as much land as will run two bands of sheep adjoining my own home. I never intend to keep any more than two small bands and I am prepared to pay one and one-half cents per acre for this open winter range where there is no water and never will be taken up by settlers, and after a man has control of his own land he can put in dams in places to hold water for stock.

"I will give you an instance of what has just happened the other day on the creek. I have taken my desert claim; have been at the expense of grubbing brush, putting in small dams to hold water for lambing, etc., to go and find another man camped and enjoying the benefits of my hard work on one of the dams. I trust that the State will get the land from the Government and lease it without delay, as it is the only way to help a man out and save his stock from starvation and be a great source of revenue to the State. I have an application for six sections on file in the office now, but I don't suppose I can get it granted till the State gets more land. I hope you will excuse me for taking the liberty of writing you on the subject, but somehow I could not refrain from doing so, as I think your views just need encouragement and some backing for to have them carried out.

* * * *''

''RANCHESTER, WYO., March 21, 1898.

''MR. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyo.

''DEAR SIR:

''Your card does not afford space for me to express my views on the pasture land question. To begin with I would say the right to lease this land would benefit settlers, and the limit should be placed at two sections, 1280. The only way it can be handled that I can see would be for the Board to be governed by the amount of feed that an applicant for a lease produces for the winter, for every one handling stock in this end of the State aims to feed it in the winter. And another very important thing to be looked after in the laws for handling this state land is to take into consideration the per cent. of the settlers who have no unoccupied land joining their land. To do justice to all, those settlers would have to be allowed to lease pastures wherever they could get them without injuring some adjacent settler, that is to say the land unoccupied would be left at the refusal of the settler whose land it joins for a reasonable length of time not to exceed six months, which would give said settler ample time to lease said land. I would recommend a rental price of two cents per acre, one cent per acre to go into a bounty fund for the extermination of wolves and other destructive varmints to settlers and the other cent to be used in building reservoirs. There is no settler in this part of the State that would not willingly pay the extra cent if it was put into a bounty fund and properly handled. I would suggest that the Governor be given the power to appoint a bounty commissioner in each county in the State, who will duly qualify and give bonds for handling said fund.

* * * *"

"CASPER, WYO., March 11, 1898.

"MR. MEAD,
Cheyenne.

"SIR:

"In reply to yours of the 1st I would say that I am in favor of such a distribution of the State's land, and without such lands the small ranchmen must sooner or later give up, as the greater number of small ranchmen cannot make it pay without stock and no one can run stock enough on 160 acres of land to exist, let alone living, and such a distribution of the land, four sections to the man at one cent an acre, would be in reach of all; and I believe that such a distribution, at such a price, will meet with general favor in this part of the country, as every man I have seen talks that way. Besides, in my opinion any man that is not loyal enough to the State to be willing to such a division is not worthy of the State's benefits.

* * * *"

"BOX ELDER, WYO., March 3rd, 1898.

"HON. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyo.

"SIR:

"I am greatly pleased to see the great effort you are making in the interests and benefit of the settler and ranchmen in regard to the range question. The peace and prosperity of Wyoming would be proclaimed if this could be brought about as you have explained. I live in a district where every settler uses the open range more or less, and for the last three years I have been in constant fear that there would be serious trouble between the ranchmen and sheepmen, but so far we have avoided it in this immediate neighborhood by mutual agreements. I think if we could get a grant of five million acres and give the settler a preference to lease the land adjoining him, that there is not one settler in ten that has any stock but what would lease from one to four sections, and that also where there is any advantage from springs they would build small reservoirs and store up water to irrigate and improve such land as could be irrigated and which would not justify a settler to locate upon. I think a rental of one cent an acre would be right for such lands as they are now, and what improvements could be made by the settler would be a great benefit to the State, and I should also state that the funds derived therefrom be used as you have recommended; and as to adding to the value of lands irrigated, if a settler can lease the lands adjoining him, or if not, the land that will be most convenient to him, it will greatly add to the value of the irrigated lands, as the grazing lands are to the irrigated lands as the wheels are to the wagon—you can't run the ranch and stock without it. There has been a great many settlers sold off their cattle now just for that very reason, as the range flocks grazed the lands right up to their little homestead and they had no protection. We are protected as a nation. Why can't we be protected individually?

* * * *"

"DOUGLAS, WYO., March 14, 1898.

"HON. ELWOOD MEAD,
Cheyenne, Wyo.

"In reply to your postal of recent date would state that your plan of leasing the lands (should the State get another grant) meets with my hearty approval. If the thing could be carried out as you propose it would double the value of every irrigated ranch in this country. Things are in a bad shape here at the present time. A ranchman can't tell whether he is going to be able to hold his cattle or not, on account of sheep. The range business, as it now is, is a nuisance. If the ranchman with a small bunch of cattle could be assured of range for them in summer, this would be the best country on earth. The ranchmen of this country have worked hard and faithful to make this country what it is and should have some little right to the range around him.

It is conceded by all that there is nothing to be made by farming without stock. But combine the two, as your plan would make possible, and we are all right.

* * * *''

"CHEYENNE, WYO., March 13, 1898.

"TO STATE ENGINEER,
Cheyenne, Wyoming.

"DEAR SIR:

"Your postal, relating to the range subject, is to hand and ought to have been attended to before now.

"Q. 1. Do you use the open range?

"A. No; and for the reason, the range in my section of country is all fenced by people who monopolize all the public land for their own aggrandizement to the exclusion of others. I should most assuredly use the open range contiguous to my ranch had I the opportunity of doing so.

"Q. 2. If so, state what kind of stock you would range thereon?

"A. I should range cattle and horses.

"Q. 3. Would the right to lease part of the contiguous range benefit settlers?

"A. I have not the least doubt but that the leasing of lands would be a great benefit to settlers. It would give them fixity in their holdings and business which are at present in a haphazard and unsettled condition, as their tenure of holding the public land is in direct violation of law.

"Q. 4. What limit, if any, should be placed on the number of acres a settler could lease?

"A. I think the settler ought to be allowed to lease land up to ten thousand acres. In this leasing there ought to be a sliding scale, as five thousand acres in some sections would be equivalent, perhaps, to ten thousand in other parts of the country. Then, again, parties might be able to rent land adjacent to their ranches. They have to go from ten to thirty miles to get their quota.

"Q. 5. Should the land be leased at a fixed price per acre? If so, what rate would you recommend?

"A. Yes; I think there ought to be a fixed price per acre and right here, I think, we will have to apply the sliding scale again. There will be such a difference in the grazing lands and locations that, with the idea of fair play before us, I don't think with justice we could establish a uniform price per acre. I should say three cents per acre should be the maximum and one cent the minimum. I base my calculation on the above at fifty acres to the cow for the whole twelve months. This would cost the rancher $1.50 for grazing one head for a whole year. Also this is about the price charged here by ranchers for pasturing cattle, big and little. This fifty acres seems large for one animal but it is none too large, taking one season with another.

"Q. 6. What should be done with the money of leased lands?

"I think the money ought to be used to make a thorough reconnaissance of the State for reservoir sites, making a thorough survey of same, and doing all necessary work to enlist capital to engage in their construction for the reclamation of lands. The next suggestion I should make that the money be left to the wisdom of our legislative assembly as to its disposition.

"Q. 7. Yes; I'm in favor of the donation in your report and after thirty years' experience handling cattle on the range I can't find the slightest objection to it, but, rather, it would be of incalculable benefit to the present settlers and the State at large. I have not the least hesitation in saying, were our settlers protected in their grazing lands for their own exclusive use it would stimulate the growth of our young State to a permanent business stability ahead of any other step that could be taken.

"It is unnecessary for me to enlarge further on these grazing lands. You are perfectly aware of the present condition. It is a mere scramble for who can grab the most and no care being taken of the range grasses, a few years of this destructive work will kill the goose that lays the golden egg. If each had his allotted share I have not the least doubt but the grazing would be protected, because it would be to the interest of the settler to do so.

* * * *"

"PATRICK, WYO., March 9th, 1898.

"ELWOOD MEAD,
State Engineer,
Cheyenne, Wyo.

"DEAR SIR:

"I desire to express my approval of your report advocating a grant of five million acres of pasture land to the State and leasing the same to actual settlers. I also indorse the conditions you suggest as to price per acre and the limit of number of acres to be leased to each settler, etc.

"I have been a resident of Wyoming for twenty years and feel qualified to a limited extent at least to express the wants of the small ranchman. At present the remaining range herds whose owners domineer several townships are a menace to the smaller cattle owners, many of whom are trying to improve the quality and breeding of their herds. Under existing laws each individual cowboy is a licensed dictator, to do a favor or to harm a settler; even fifty miles from where his employer is paying a cent's worth of taxes, if he is detected in driving away cattle from their home he merely has to say that he is on the round-up and everything goes, and present conditions shield him from punishment.

"It would also give the owners of large herds a chance to pay a reasonable tax on their stock, along with the small cattleman whose herd can be counted any time to the last animal.

"It would be a move toward humanity, also, when these pastures are built, for ample watering places would be provided, and no man other than a fool would keep more cattle than his pasture and hay would support, for he could see the live and dead animals any time. The sheepman may oppose this scheme, but in this locality I dare say there is not a sheepman but what would be benefited by leasing a fair pasture to fall back on. They would have the outside of these several larger pastures belonging to other ranchmen to run sheep on when there was snow on the ground, allowing them to stay away from streams during the winter season. In fact, the cattle would be in pastures, nearly all, and the range would go to the wool grower.

"I have written at length, because I have prayed that this might be the outcome of this arid land matter for years, and unless something of the kind is brought about I fear I cannot make a success at ranching in Wyoming.

* * * *''

"BOX ELDER, March 9th, 1898.

"HON. ELWOOD MEAD,
State Engineer.

"DEAR SIR:

"* * * * * * *

The gloomy cloud which threatens to enshroud the life of the poor ranchman seems scarcely to be passing away from the horizon of this neighborhood. The sheepmen are getting very aggressive. We have the 'dead' lines drawn, since last spring. Our committee will meet the sheepmen in Douglas on the fifteenth. Results will determine our peace for this year. We will never have a home that we can call our own until the land is donated to the State and rented to the settlers. Without the use of the arid land for grazing our homesteads are no more for our support than a daisy in an elephant's mouth to appease his hunger, and till we have some right on the grazing land we must be like the Jack-rabbit, always ready to jump.

"We have no security for the enjoyment of vested labor and capital under present conditions. Therefore we are not encouraged to improve. Give us four sections of grazing land adjacent to our homesteads, or as near as possible, for every 160 acres irrigated, and we will go to work with a will, build comfortable homes, reservoirs, ditches. We will throw the rocks into the hollows and cover them with rich sediment from water-courses and hillsides. Over their brow we will cut two tons good alfalfa to the acre.

"Lots of fine places here that could be improved easily by ploughing furrows out of gulches and springs to convey the snow-water in the early part of summer when it is rushing down to the big creeks, rich and thick with cattle droppings, the leaves of trees, and sand, etc., etc. Give us these sections to rent and we will soon stop the big volumes of water that run pell-mell every year off to the ocean, drowning families, destroying property and laying waste everything in its path.

* * * *"

All the letters published are from actual farmers and live-stock owners. In addition to these direct replies to the postal card inquiry the later correspondence of this office contains hundreds of letters asking for the selection of land to be leased and advocating the leasing system. Unless these letters misstate the opinions and needs of the writers there is a very general desire on the part of small ranchmen to lease and fence the range they use.

My opinion of the free range is well known. I do not regard its perpetual maintenance as either possible or desirable. I am as firm as ever in the belief that, in this State at least, the value of irrigated farms and the success of our farmers depend on the control of enough grazing land to furnish summer range and that the fairest and most effective way to secure this is to give each farmer the right to lease a few sections of this public land at a low rental.

In saying this I am not animated by a desire to advance any particular interest. I believe that there is a place in this State for both sheepmen and cattlemen and am anxious to see both industries prosperous; nor do I regard those who oppose a leasing system as being controlled by unworthy or dishonest motives. I believe they are as sincere in holding their views as those who agree with me are in theirs.

I have included this discussion in the report because the fact that there is no more land to be selected makes it a good time to consider the subject in an impartial manner, and I see no reason why such discussion, if conducted in a good-natured fashion, will not be of service in bringing about a better understanding than has hitherto prevailed.

SHALL THE ARID STATES OR GENERAL GOVERNMENT LEASE THE GRAZING LANDS?

Stability of the western live stock industries and the utilization of our large rivers both require that the grazing lands be leased. In my preceding reports I have advocated this being done by the states and have regarded the cession of these lands to the states as a necessary preliminary thereto. I still think that, so far as Wyoming is concerned, such cession would be wholly beneficial, but I have learned during the past year that some of the other arid states have widely different interests and are subject to conditions which make them reluctant to assume the responsibility of managing all the lands and prevents assurance of the success which I am confident would attend our assuming this trust. The principal reason for advocating cession has been the desire to put an end to range stock controversies which threaten domestic peace; to render irrigated agriculture more profitable, and to secure for the State the funds needed to aid in building large canals and extensive reservoir systems. But all states are not equipped as is Wyoming with a Land Department for the management of leases or an Engineering Bureau for the construction of public works, and in the states differently situated it has been proposed, as a substitute for cession, that the general Government should inaugurate a leasing system for the non-irrigable grazing lands to be handled by the General Land Office in connection with its disposal of the lands which can be farmed, the funds arising from such leases to be expended in these states in building canals and reservoirs for reclaiming the irrigable public land. I see no reason why this could not be done and why it would not be an immeasurable improvement over the lack of management or control which now prevails. It is not a question of securing title to the land which is important, but the inauguration of a system which will preserve the native grasses from injury, if not destruction, through over-stocking the range, and secure the conservation and best use of the waters of our rivers which now run to waste.

STATE OR NATIONAL AID FOR THE CONSTRUCTION OF LARGE CANALS AND EXTENSIVE RESERVOIR SYSTEMS.

So far as this State is concerned, I do not believe we are going to enlist private capital in the building of canals to utilize our largest rivers or in the construction of reservoir systems on the head-waters of streams. In both cases the outlay is too great to give any assurance of a satisfactory return and the nature of these improvements gives them a public rather than a private character. Nor do I believe Wyoming is an exception in this regard. The results which have attended the enactment of the Carey law show that the favor which was once extended to investments in large irrigation works has been withdrawn. Wyoming is the only state which has thus far built a canal and actually irrigated lands under this act. In the five other states which have accepted the donation the efforts of the State authorities to secure the enlistment of private capital, or to sell State bonds which give a lien on both land and canal for their payment, have resulted as yet in nothing but prospects. Even if private capital could be enlisted it is a matter worthy of thoughtful consideration whether these works should not be subject to a larger measure of public control. Experience has shown that cities should own their water works systems. I believe it is destined to show that irrigation communities dependent on a single large canal should own that canal.

The leasing of the grazing lands will provide a fund for the building of these works without making it either a drain on the public treasury or a burden on the people of the several states, and the expenditure of the money in this way will not inure to the benefit of the people of these states alone. It will provide landed independence and cheap homes for the poor but energetic seekers after them who now live in the overcrowded districts of the east.

REPORT OF JAMES A. JOHNSTON, SUPERINTENDENT OF WATER DIVISION NO. 1.

Elwood Mead,
State Engineer of Wyoming.

Having been a member of the Board of Control for the past eight years and served as Secretary of that body for the period above named, my duties in these positions have enabled me to become familiar with irrigation matters throughout the State of Wyoming in a practical way. The difficulties that the Board had to contend with from its inception were numerous and varied. No precedent had been established for its government in its line of work. All its forms and methods of procedure had to be thought out and formulated, the surrounding conditions considered and the best methods devised for dealing with them. That more errors were not made is attributed to the fact that care was always taken by the Board, before passing on a matter, to get at the facts. In the first adjudications attempted in any particular locality the Division Superintendents have found great difficulty in getting the people interested enough to give their testimony in the best manner. Too much guessing must necessarily be indulged in under our present method of taking testimony. There seems to be a lack of care in getting at the proper date of appropriation, a disposition to guess or take some one else's word for it.

I would recommend that the law be amended so that in cases where an appropriator cannot swear positively, of his or her own knowledge, to the date of his or her appropriation, that they be required to produce competent witnesses before the Superintendent to establish the date of such appropriation with reasonable certainty. The date of appropriation is the

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most fertile source of contests. This is a very undesirable way of arriving at the facts, as contests stir up neighborhood strifes and are almost always the source of ill feeling among neighbors. The necessity of this would be almost entirely obviated if the law gave the Superintendent more power in requiring additional proof at the first hearing. The first adjudications were made after the State Engineer's survey, but without the assistance of his maps and plats of the ditches and the land irrigated. These, it was found, were a necessity not only for the assistance of the Division Superintendent but for the appropriators themselves, and as the work of adjudication has progressed it has become more apparent that these maps cannot be too carefully prepared, as they are not only useful in adjudications but are permanent and invaluable records of the State. I would recommend that ample means be provided by appropriation for the purpose of immediately surveying and platting all unadjudicated streams and ditches in the State, and that as soon as possible thereafter these adjudications be made. The principal reason for this recommendation is the difficulty that is often encountered in establishing old appropriations. The person who originally made the diversion and irrigated the land has moved on or is dead. The property, together with the water right thereto, has probably passed through several hands without any intelligible record having been made of its most valuable appurtenance. As the years roll by it becomes more and more difficult to establish the correct dates of these appropriations. The intention of our law is that these matters be settled definitely at the earliest possible date, thus preventing troublesome and aggravating litigation. Ample means should be provided for doing this work, which is of as much vital interest for the welfare of the inhabitants of the State as the titles to the lands irrigated.

The law provides that a Water Commissioner shall not act, only on the written request jointly of two appropriators of water fróm the stream on which he is called to act. Emergencies have arisen time and again where two signers could not be secured to the request to act. Where his services were urgently needed in most of these cases the Commissioner has applied to the Division Superintendent for direction, and has invariably been directed by that official to investigate the matter for which his services are required. This method takes time, where immediate action is desirable. The law should be amended so that the Water Commissioner can act on the request of one appropriator of water from the stream or of his own volition when necessary.

The position of Water Commissioner is not a pleasant one. His services are sure to fail to please all. To be successful he must be a man of good judgment and have a knowledge of the conditions prevailing on the stream over which he attempts the division of water. Here I wish to say, as Superintendent of Water Division No. 1, that as a rule the services rendered by the Water Commissioners in that Division during the past eight years have been of the most satisfactory nature, two of them having served for the full eight years.

The records necessary to be kept by the Secretary of the Board are from year to year becoming more extended and important. Constant reference has to be made to past records, hence greater care must be observed as the records increase.

The correspondence of the office has also grown to be voluminous. Inquiries relating to the records are constantly being received. The public expect answers and correct replies to their inquiries. The Secretary should be a salaried officer, so as to enable him to give all his time thereto and the public be served.

During the last two years the adjudications completed have been as follows, in Water Division No. 1:

The adjudication of Medicine Bow and its various tributaries was completed and certificates ordered issued. The following is a list of the new work taken up and completed in that Division during 1897 and 1898:

Cottonwood, Elkhorn, La Bonte, La Prele, Box Elder, Deer, and Wagon Hound creeks, together with the proofs under permits made and approved by the Board during that time.

The work done in the adjudications of the last two years has been of the most satisfactory nature, more care having been taken by the Division Superintendent in getting the facts. The Board of Control has been more exacting and rigid in its requirements, all of which, we believe, the people of Wyoming have come to appreciate. In other states irrigation matters have proved a fruitful and vexatious source of litigation. Not so in our State. Whenever tested the courts have upheld the actions and decisions of the Board of Control. It is a source of great satisfaction to the retiring members of the Board that the irrigation litigation that other western states are burdened with does not exist in Wyoming.

J. A. JOHNSTON,
Secretary.

REPORT OF EDWARD GILLETTE, SUPERINTENDENT OF WATER DIVISION NO. 2.

SHERIDAN, WYOMING, NOV. 20th, 1898.

HON. ELWOOD MEAD,
President Board of Control,
Cheyenne, Wyoming.

DEAR SIR:

In compliance with your request, I hereby submit report of work in Water Division No. 2 for the years 1897 and 1898, with such recommendations as seem to me pertinent.

Nearly all the streams carrying much of any water in this Division were adjudicated four years ago. During the two years just past the users of water here have become thoroughly familiar with the distribution and control of same by the Water Commissioners. They have learned somewhat the value of individual rights, and have a more comprehensive insight as to the water laws of the State and the needs of their particular locality. While there have been many contentions, and some law-suits, these latter have been avoided as a rule, when the situation has been explained to contestants.

In District No. 3, which includes Piney Creek and tributaries, the services of the Water Commissioner are in almost constant demand during the irrigation season, and this is also the case in District No. 4, which includes Little and Big Goose Creeks and tributaries. In these two districts I have found that the best results are to be attained by having the Water Commissioners constantly employed during the critical season of irrigation, as the percentage of yield in crops is thereby greatly increased by the more prompt and intelligent distribution of water, gained through being in constant touch with the farmers, and the intimate knowledge acquired as to the flow of water. One of the greatest concerns has been the limited time allowed by law during which Water Commissioners can be paid. In some districts the time allowed is more than sufficient, while in others the reverse is the case. I would recommend that the time allowed in some districts, which is not required, be made transferable to those which require more time. It is practically impossible to divide a Water Division into districts which require the same amount of time to distribute the water. The Water Commissioner is limited somewhat in the area he can visit; some streams are thickly settled and all the water appropriated, while in other places, the streams being small and fewer farmers requiring the services of the state distributor, much less time is required to do the work.

It is very unsatisfactory to the users of water and all concerned to have a Water Commissioner stop work in the middle of an irrigation season, on account of the time allowed him to act having expired, while in other districts not one-fourth of the time allowed has been used. In an important district, where the services of a first class Water Commissioner have been secured by the Superintendent it is well to retain such service, but very difficult at present, as the work required is in excess of time allowed, or compensation. There are, as a rule, few persons in a district possessed of sufficient judgment, tact and courage to make good Water Commissioners. At present it is necessary to urge a first-class man to perform the work required, on the ground that it is a duty to the community in which he dwells, for the one being the best equipped to perform such services to do the work.

The condition existing on most of the streams in this Division is that the natural flow of water during the month of August is not half enough to meet present demands. The prompt action of the Water Commissioners during the past two seasons of irrigation, in making use of sudden rises in the streams caused by late rains in the mountains, has resulted in a saving of probably one-half the late crops harvested in this Division. Where so much is at stake the cost of a few days' more service of a Water Commissioner is a small consideration.

The question of measurement and distribution of water is becoming more important each year, and this duty is bound to increase rapidly in the future in this Division.

Each year witnesses a substantial increase in the acreage of irrigation in this Division; this applies to late as well as early irrigation, and the result is that the duty of water has been stretched beyond its limit. Those who years before have had a full supply of water experience now a shortage, owing to those having superior rights using said rights to their full capacity on lands requiring late irrigation. The flow of the streams seems to continue to be about the same each year, but little has been done to store up water, especially in the adjacent mountains.

The citizens generally in this Division appreciate keenly the urgent need and value of reservoirs. Many of our farmers formerly lived in Colorado, in localities where a farm is not regarded of much value unless an interest is owned in some reservoir.

There is no question but that this section of the country is on the eve of a great development based on reservoirs, which, when accomplished, additional settlers can be recommended to with a clearer conscience. It would vastly increase the value of the State and make practically a perfect water system if the State could secure the most favorable sites for reservoirs and construct the works for same now. Probably no money could be expended with equal benefit in any other direction, and the conditions which exist in this Division are probably duplicated in other Divisions of the State.

I have made a somewhat extensive examination in the Big Horn Mountains of the drainage areas of the streams in this Division and have found natural reservoirs which require but the closing up of a small outlet to store large quantities of water. The capacities of those reservoir sites found, of cheapest construction, are as follows:

On Tongue River....................	2	reservoirs,	5,000	acre-feet	capacity
" West Fork Big Goose Creek,	6	"	12,500	"	"
" East " " "	6	"	12,500	"	"
" West Fork Piney Creek......	2	"	6,000	"	"
" East " " "	3	"	20,000	"	"
Total......................................			56,000	acre-feet	capacity

Lake DeSmet, which is in a valley about six miles from the mountains, has a capacity of 67,000 acre-feet. This increases the capacity of cheap reservoir sites to 123,000 acres of water one foot in depth, or water sufficient to complete the late irrigation on 246,000 acres of crops, allowing therefor six inches of water over the entire area. Some idea of the value of above reservoirs can be gained by the following comparison:

123,000 acre-feet of water stored, at $2.00 per foot........	$ 246,000.00
Yearly value of 246,000 acres of crops, at $10.00..........	2,460,000.00

This is a *yearly* increase of values equal to ten times the cost of said reservoirs. The base of the Big Horn Mountains on the east consists of a high abrupt wall; back of this the country is undulating—a rough table land, in fact, for twenty miles—until the main divide is reached. On this elevated mesa, or plateau, hundreds of lakes and meadows exist, many of which form natural reservoir sites. Those enumerated above constitute but a small number of what will be utilized in the future as the country developes. I have above referred simply to those most favored sites which were examined by me, and many of which I surveyed in order to ascertain the capacity and approximate cost of placing them in working shape.

Several reservoir companies have been organized the past season among the farmers and considerable money has been raised in order to construct reservoirs next year. This is slow work, however, at best, as the means of the farmers are too limited to accomplish much; this whole country, in fact, being of comparatively recent settlement.

In view of the reservoir work now going on and contemplated it is of the greatest importance that laws be passed at the next session of the legislature regulating and defining the rights and privileges of reservoir companies. Many of our ranchmen are delaying now the construction of reservoirs simply for the purpose of ascertaining the manner in which their proposed investment will be treated by the State, while those who are going ahead with these improvements on general principles are manifestly entitled to know as soon as possible the method under which they will be allowed to work and what protection and encouragement they will receive from the State. The construction of reservoirs benefits all lands capable of being watered by same, somewhat on the principle that the building of a canal enhances the value of land under it, but not to so great an extent, as a rule. The water from reservoirs in the Big Horn Mountains will command a vast extent of country and be more independent of the land in any locality than that land is of the reservoir. A small expenditure, therefore, in reservoirs may control a vast amount invested in land and improvements. Water is the basis of all values in this arid region on account of its scarcity and on account of the great abundance of land. Water being of such vital necessity and limited in quantity, it seems proper to place certain restrictions or regulations on its disposition. The privileges accorded any reservoir company can be ample enough to warrant the investment of capital without granting an absolute control over depending investments vastly greater than that invested in such reservoirs. If a reasonable interest on capital is assured and an additional percentage allowed to induce capital to take hold of these reservoirs great good can be accomplished. State control over all the waters of the State should never be sacrificed. Its use can be freely granted. The more protection and supervision granted by the State to the investment of capital in reservoirs, the surer and safer the income with less expense to investors. As regards the building of reservoirs by communities of farmers this will take care of itself and should be encouraged first of all. The actual settler and the one who has made the permanent improvements to the land reaps the benefits he alone is best entitled to. The advantage of having capital take hold of these reservoirs is where the farmers and the State have not the means necessary to carry on such work and to develope unsettled lands. To strike a happy mean in legislation so as to protect the work of our farmers, and capital, as well, would be of more lasting and permanent benefit to both, although it might eliminate in a measure the high speculative character of reservoir construction, which is based chiefly upon the previous efforts of others. The importance of this reservoir question at present so far overshadows all others that it seems more fitting to terminate my report here, as far as the water of this Division is concerned, leaving questions of minor importance for future consideration, so as not to obscure or handicap in any way the ruling question of the present time.

SELECTION OF STATE LANDS.

The duties of this office as a part of the Public Land Commission in the selection of State lands for leasing purposes have been limited only by the small quantity of land placed at our disposal. The uniform price of rental on lands selected so far has been five cents per acre per year, regardless of the character of the land. As many times the amount of land we have had to select has been asked for at this price it seemed best to secure this rental for the State. The fact, however, exists that many of our farmers cannot afford this rental. In some places it takes five acres of land to produce as much feed as one acre in more favored localities; therefore, many applications have been received for lands at a less rental than that now afforded. It is earnestly desired by these applicants that some relief be accorded them. I have avoided making any recommendations for applications which appeared in the nature of selections of water holes, thus commanding a large scope of country at trifling cost; however, these same watering places can be easily secured under United States laws; a desert or homestead filing or some cheap form of scrip will answer the purpose just as well. Under State control a much more safe and equitable disposition of these lands could be made.

I have followed out the rules of the Commission in recommending for selection those applications of farmers and stock growers, for the grazing lands adjoining their farms. So many applications have been received that it has been impossible to consider more than ten per cent. of the lands asked for. The result of this has been to select those lands applied for, as a rule, with which I was familiar and which could not conflict with the rights of other property owners. The reasons for this were two-fold; one was on account of the small amount of land available, the other on account of the fact that but a limited sum of money could be expended in the examination of these lands. The expense connected with the performance of so important a branch of the State's business, and which yields so great a revenue, should be better provided for.

From reports by the Government, I learn that the total precipitation of moisture in this Division would be sufficient, provided all was saved by storage reservoirs, to irrigate six per cent. of the land. Probably the limit to which we can hope to attain in the future will be a saving of less than fifty per cent. of the flood water which now goes to waste in the flood season. This will forever leave ninety-seven out of every one hundred acres unsuitable for settlement, and of no use except for grazing purposes. The problem which confronts the State as to the care and disposition of these lands is one requiring immediate solution. The reasons given here for the State securing these lands and leasing them to the settlers, are as follows :

First.—It is of vital importance to a farmer to control a part of the range contiguous to his home. This is as essential to him in the raising of stock as his irrigable land. If he is engaged in the cattle business, he has to be assured of a range for sufficient time to insure the maturing of his herd. It is more economical for him to pay rent for land than to pay round-up expenses, where he suffers a greater percentage of loss; is unable to quickly gather his herd to take advantage of the market, and has no government over the quality and time of his crop of calves. If he is in the sheep business he has to be assured of water and suitable lambing grounds.

Second.—It is of great importance to the State that some care be taken to preserve the natural grasses, as from this source the greatest revenue of the people and State are bound to come in this arid region, ninety-seven per cent. of our land being involved.

Third.—The State requires more permanent settlers, desires to keep those it has, and can utilize more revenue to good advantage. The supply, measurement and distribution of water requires greater expenditure each year, while the steady increase of animals, destructive to the stock industry threatens the very life of our principal business. Something must be done quickly to exterminate these pests. By the judicious selection and rental of land, great good can be accomplished, many perplexing and harmful problems safely solved, not the slightest injury done to anyone, but *all* our citizens would be benefited thereby, and the revenues of the State would be greater from this source than now derived from taxation, and Wyoming would more quickly attain the prosperous condition she has been struggling for, than in any other possible manner. The whole question resolves itself into one of common sense and judgment in the selection and rental of these lands. This result can be practically attained by adhering to the rules now governing same, which, it seems to me, would be well to inaugurate into State laws.

I have now on file 400 applications for which there is no land available. These have been made mainly to have the same in readiness for action when the State secures more land, which, it is confidently expected, will be sometime during the coming winter.

As the future business of these applicants, who are settlers, depends on the securing of some grazing lands, it is earnestly hoped that something can be accomplished by the State toward securing another donation of land from Congress during the next session.

Respectfully submitted,

EDWARD GILLETTE,

Supt. Water Division No. 2.

REPORT OF N. H. BROWN, SUPERINTENDENT OF WATER DIVISION NO. 3.

HON. ELWOOD MEAD,
President of the State Board of Control.

DEAR SIR:

As Superintendent of Water Division No. 3, I respectfully submit the following report:

During the year 1897 the rights to the use of water from the No Wood River and tributaries were adjudicated, the testimony being taken in May and June, and the proofs submitted to public inspection October 2nd. No one appeared to examine the evidence and there were no contests.

The volume of water in the stream and in most of its tributaries is so large, compared with the acreage irrigated, that with the exception of Broken Back Creek and Crooked Creek the later rights are practically as good as the earlier.

The adjustment of the old Territorial rights should be completed, as the change of ownership and removal of witnesses render the task each year more complicated and the proof less reliable.

Owing to the lapse of time it is difficult and in many cases impossible to draw the line between appropriations made before the act of December 22, 1890, and those made since, although that law makes a sharp distinction by providing that "*Hereafter*, before commencing construction of distributing works or performing any work in connection with said appropriation, application shall be made to the President of the Board of Control for a permit to make such appropriation."

The fund available for surveys of unadjudicated streams and ditches and for stream measurements should, in my opinion, be considerably increased, so that the work of collecting testimony and adjudicating claims would not have to wait for the maps.

The need of an adjudication of the rights from Owl Creek and Grey Bull River in this Division is especially urgent, but the work has been delayed from year to year on account of the expense of surveys required.

For the same reason no systematic observation of the flow of any stream in this Division has been made, although the value of such data is unquestioned.

In order that the appropriation for per diem of Division Superintendents may be used for the purpose intended, the Legislature should be asked to make a special appropriation for the clerical work of the Secretary.

Very respectfully,
N. H. Brown,
Supt. Water Division No. 3.

REPORT OF CHAS. H. PRIEST, SUPERINTENDENT OF WATER DIVISION NO 4.

EVANSTON, WYO., Nov. 9th, 1898.

ELWOOD MEAD,
President of Board of Control.

DEAR SIR:

Herewith find biennial report covering the years 1897-98 for Water Division No. 4. During this period the adjudications of Black's Fork Creek and its tributaries have been completed and certificates of priorities issued in conformity with the proofs taken. I also went to Salt River Valley to take proofs under new permits granted since the adjudication of that stream; also taking proofs for amendment on prior adjudication. There has been no serious trouble over water rights on streams that have been adjudicated in my Division. A short water supply is reported on Black's Fork Creek the present year. This section of Uinta County has been largely developed and many new settlers have located there within the past two years, and farming has been successfully carried on. I am credibly informed that over 40,000 bushels of wheat was produced there the present season. Salt River Valley has also produced large crops of grain this season. When appropriation of water becomes better regulated with the proper use there will be less cause for complaint.

I would recommend that the Legislature amend the law so that either the State Board of Land Commissioners or the Board of Control have the selecting, leasing and selling of State lands.

Respectfully submitted,

CHARLES H. PRIEST,
Supt. Water Division No. 4.

RECOMMENDATIONS.

SALARY OF SECRETARY OF BOARD OF CONTROL.

The Superintendents of Divisions No. 1 and No. 3 recommend that the Secretary of the Board of Control be made a salaried officer. In this recommendation I heartily concur.

The exceptional freedom of irrigators in this State from the litigation and water right controversies which threaten the success of agriculture in other arid commonwealths is due in a large measure to the policy of making titles to water definite, and matters of official record, before disputes arise. Our continued success in this regard will largely depend on the completeness and accuracy of the records of adjudications and the care and thoroughness of the Secretary in keeping them.

These records contain the evidence of title to the most valuable property in the State so far as agriculture is concerned, and about which there may yet be inter-state controversies over its control. Both the present and ultimate importance of the interests involved demand that the Secretary be specially qualified for the performance of the duties of the office and be enabled to properly attend to them.

The experience of the past four years has shown that doing this has taken all the time of the present incumbent which could be spared from his duties as Division Superintendent, while, in addition, it has been necessary for the Engineer's office to render considerable clerical assistance.

I believe that the law should be so amended as to provide that the Superintendent of Division No. 1 shall be Secretary and the salary paid cover his work in both positions.

While the qualifications of the two positions are not the same they are not dissimilar, as the efficient work of Mr. Johnston has demonstrated. Combining them will be a measure of economy and the only thing needed to make it equally as effective will be a little extra care in selecting a man for the place.

Making the change will not increase the expense. The present arrangement is neither economical or satisfactory, as the per diem provided amounts to more than the required salary, where all the work needed to be done is performed.

RIGHTS TO STORED WATER.

There is need of a law to promote the storage of water; to fix the rights of the owners of reservoirs in the water stored therein and to provide for its distribution among purchasers or users. The discussion of this question in the report of the Superintendent of Division No. 2 is commended to the consideration of our Legislature.

NOTICE OF APPLICATION FOR WATER RIGHT.

It is the duty of the State Engineer to refuse applications for permits where streams have been fully appropriated, or where the proposed diversion will interfere with the rights of prior users. In many cases he cannot tell whether the proposed diversion will or will not injure other users, and the law makes no provision for the notification of those whose rights will be impaired by such diversion. I believe that it should be amended so as to require every party filing an application for water right with the State Engineer to give notice of such application in some newspaper in the county where such proposed diversion is to be made. This will enable any one who wishes to protest to communicate with the State Engineer in time to make his objection effective. The expense of such notice will be small—not to exceed one dollar for each notice.

FEES FOR ISSUING AND RECORDING CERTIFICATES OF APPROPRIATION.

The State Engineer is required to collect one dollar for every Certificate of Appropriation issued, and the County Clerk by whom it is recorded has to charge seventy-five cents for the same. As the issuance or recording of this certificate is not necessary for the protection of the appropriator's rights many prefer to leave them in the Engineer's office, and we have now on hand several hundreds which are held for the payment of the fees.

Complaints have been made that this is unfair to those who comply with the law and an obstacle to the examination of water right titles, as the county records are incomplete.

It has been suggested that the law be amended so as to require both these fees to be paid to the Division Superintendent at the time proof of appropriation is made.

ACKNOWLEDGMENTS.

I desire to express my thanks for the transportation furnished myself and my assistants by the various railroads of the State. It has resulted in a material saving of our contingent fund and enabled us to do much more work than would otherwise have been possible.

The Board of Control highly appreciates the prompt consideration given its land selections by the State Land Board. The uniform confidence and courtesy of this Board has done much to alleviate the disagreeable features inseparable from our connection with this property.

The office is indebted to Senator Warren and Assistant Land Commissioner Mondell for maps and publications of great interest and value.

PERMITS TO APPROPRIATE WATER.

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
840	3	Edward T. Payton	Big Horn Hot Springs	5			*		$ 5,000		‡
841	3	D. Picard	Bridger Cr.	1.875	6	4	1.5	5	500	160	1896
842	3	" "	" "	2.5	6	4	1.5	10	700	200	"
843	2	Thos. J. Gardner	Red Fork Powder River	2	4.5	4	2	6	150	240	"
844	1	George I. Lambe	La Prele Cr.	1	5	3	1	5	300	160	"
845	1	George E. Brown	Six Mile Cr.	3	5	4	1	5.28	300	†	"
846	1	" " "	Tributary of Big Cr.	3	4	3	1	5.28	300	†	"
847	1	" " "	Spring Cr.	1	7	5	1	2.64	100	120	"
848	1	" " "	Rock Springs	2	6	4	1	2.64	150	160	"
849	1	Gering Canal Co.	North Platte River	80	116	80	9	1	460,000	16,900	1897
850	1	Frank White	N. Fk. of Spring Cr.	1	4	3	1.5	5.28	100	80	1896
851	3	George S. Allen	Beaver Cr.	2.5	12	5	3	5	600	480	"
852	3	W. C. Rockhill, R. M. Graham	Big Horn River	5	24	6	5.6	2	2,000	4,180	1897
853	3	G. S. Allen and C. B. Anderson	Beaver Cr.	1.5	12	4	4	6	200	320	1896
854	3	Farmers Canal Company	Grey Bull River	9	26	16	5	4	8,000	13,640	1898
855	3	Fred S. Garland	" " "	4	13	5	4	5	600	120	1896
856	3	Edward B. Flanagan	" " "	1.5	13	5	4	5	800	160	1895
857	3	Henry Renneberg	Wood River	2.75	20	5	4	4	1,000	320	1896
858	3	Abraham A. Anderson	Piney Cr.	1.5	6	4	1	6 to 15	600	600	"

* Pipe Line. † Reservoir. ‡ Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
859	3	Robert L. Davis	Little Rocky or Bennett Cr.	3	8	5	1	6	$ 500	320	1896
860	1	William Riniker	Pine Creek	1	3	2	1	13.33			"
861	3	W. S. Collins, Dennis Cunningham and Alex. McDonald	Grey Bull River	74	36	18	6	3	13,000	19,320	1898
862	3	P. L. McKee	Springs	.5	2	1.5	1	16	100	5	1895
863	2	Edward Cahill	Oil Cr.	.75	2	1	1	5	50	120	1896
864	2	Barnes C. Burris	Pine Cr.	4.14	5	3	12	5	1,000	400	1897
865	1	W. W. Mosteller	Clear Fork of Muddy Cr.	1.25	4	2	1.5	6	500	60	1896
866	1	Peter George	Spring Cr.	.5	5	3	1	5	100	640	1895
867	2	Jacob Kirsch, Westfall & Davison, and S. W. Hardee	Big Goose Cr.	2	5	3	1	5.28	250	480	"
868	3	John and Oscar Nelson	Big Horn River	2.5	22	5	8	5	3,000	560	1898
869	2	Ira Vruwink	Middle Fork Powder River	1.36	5.5	4	3	5	300	200	1895
870	2	William Friel	Bonanza Cr.	1	2	1	1	10	150	50	1896
871	3	Alex. McDonald, Dennis Cunningham and W. S. Collins	Big Horn River	40	48	24	3	1.5	100,000	47,280	
873	3	Abraham Anderson	Grey Bull River	1.25	6	4	1	6	400	280	1896
874	1	Ehler Bolln	Porter Cr.	1.5	3	2	1.5	4.8	200	160	
875	2	J. M. Doherty	Spring (N.E.¼ N.E.¼ Sec. 17, T. 51, R. 62)	.0009					25	Stock	1895
876	3	A. L. Gillis	No Wood River	2.25	20	6	6	5.28	500	720	1897
877	3	No Wood Canal and Land Co.	Paint Rock Cr.	35	50	25	8	2.5	100,000	80,000	1898

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion.
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
888	1	A. M. Crafts	La Prele Cr.	.5	30	14	5	1.25	$ 1,000		*
889	1	William Sturgis, Jr.	Sand Cr.						2,500	1,920	1896
890	1	A. J. Brail	Dead Head Cr.	1	3	2	.5	4	100	160	"
891	1	" "	" " "	1.125	3	2	.5	4	150	160	"
892	3	James Fullerton	No Wood Creek	1.5	10	10	1	5	600	240	"
893	4	D. M. Leifer	Big Piney Cr.	.75	4	3	1	6.66	100	70	"
894	4	" "	Middle Piney Cr.	.875	4	3	1	6·66	125	80	"
895	2	Frank McNally	Blue Cr.	1.25	5	3	1	8	300	115	"
896	2	John H. Jones	Red Fork of Powder River	2	5	2	.066	13.33	200	200	1895
897	1	W. A. Boyer and Thos. Salmon	North Platte River	3	20	10	4	3	2,000	720	1896
898	2	Alfred Johnson	Clear Cr	4	4.5	3	1	10	400	360	1895
899	4	R. H. Carter	Muddy Cr.	1.75	8	4	2	6	350	1,920	"
900	3	Edward T. Payton	Owl Cr.	8	10	8	2.5	2.64	4,000	2,640	1896
901	3	Alex. Sutherland	No Wood River	1.75	5	4	1	15	500	200	"
902	2	A. M. Smith	Buffalo Cr.	1	5	3	1	8	300	160	"
903	1	Charles B. Sterrett	North Fork of French Cr.	1.5	21	15	3	5.28	3,000		"
904	1	" " "	Barrett Cr.		26	20	3	5.28	500		"
905	2	John Nolan	Middle Fork Powder River	3	8	4	2	5.28	800	360	"
906	1	George R. Barnes	Hat Cr.	7	3	2	1.5	30	300	480	"
907	1	" " "	Hat Cr.	3	3	2	1.5	30	200	120	"
908	1	J. H. Robins & J. V. Fitzhugh	Wagon Hound Cr.	1.25	4	3	1.5	6	500	240	1895
909	1	LeRoy Grant	Big Laramie River	2	8	6	1	16	500	640	1894

* Not approved,

Permits to Appropriate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
910	3	Farmers' Independent Ditch Co.	Stinking Water River	10	34	14	7	5	$ 5,000	3,600	*
911	2	J. H. McShane & Co.	Sheep Cr. and Tongue River	13	3.5		1.11	4.2	48,000	3,160	1895
912	3	E. T. Payton	Big Horn River	80				10	1,000,000		*
913	3	" "	" " "	4	6	4	2	1.32	5,000	800	*
914	4	George W. Cooper	Grade Canon Cr.	1	3	3	1	8	100	70	1895
915	2	John M. De Hart	Blue Cr.	1.5	3	2.5	1.5	4	75	40	1896
916	2	Edward G. Barrett	North Fk. Powder River	.5	2.5	2	.58	7	200	200	1895
917	1	William Clark	Middle Fork Casper Cr.	1	4	3	1	5	100	160	"
918	4	George H. Phillips	Black's Fork	.375	4	3	1.5		150	160	1896
919	2	E. J. Latham	Middle Fk. Powder River	2.125	5	4	1	5.5	130	160	"
920	1	A. M. Crafts	North Platte River	3.5	35	20	6	1	10,600	2,760	"
921	3	W. D. Knight	South Fork Stinking Water River	1.5	3	2	1	7	250	280	"
922	1	A. Hemingway	Deer Cr.	.75	14	4	4.7	5.28	100	240	1895
923	1	William H. Smith	Snake River	40	14	10	2	4.48	30,000	2,840	1897
924	2	Kate A. Tisdale	Red Fork Powder River	.75	3	2	1	7	175	160	1895
925	2	George H. Peterson	Middle Fork Powder River	4	7	4	1.5	6	600	480	1896
926	1	L. J. Bush and E. C. Holliday	Big Laramie River	5	10	5	5.5	5	400	1,000	"
927	1	J. J. Hauphoff	North Platte River	10	18	12	3	4	8,500	6,000	"
928	1	Olive Everhart	Chip Creek	.5	3	2	1.5		300	80	"
929	1	William A. Jones	North Platte River	1.5	6	4	2	5	350	200	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
930	2	John H. Bears and Frank Davis	Little Beaver Cr	4	10	8	2	7	$ 4,000	1,280	1896
931	1	Wyoming Development Co.	Laramie River						60,000	60,000	1897
932	3	Walter Curtis, Eugene Sykes and Wm. Gish	No Wood River	2.5	6	5	1	4	400	720	1896
933	2	Alfred Grigg	Middle Fork Powder River	1	15	4	5	4	300	160	"
934	1	I. S. Bartlett	Platte River	6.5	12	8	2	5	5,000	3,200	"
935	2	L. A. Webb	North Fork Powder River	1	4	2	1	8	200	160	"
936	4	L. P. Hamilton	Big Piney Cr.	1.236	14	3	5.5	5	300	125	"
937	1	W. L. Kuykendall	Cedar Cr.	4.5	6	4	1.5	6	500	960	"
938	2	John Scott	Dry Cr.	.5	4	3	1	5	500	160	"
939	2	" "	Indian Cr.		5	4	1	5	850	360	1897
940	3	J. B. Okie	Poison Cr.	4	3	2	1	8	800	160	1896
941	1	W. J. Rutledge	Muddy Cr.	.8	5	3	1	5.28	200	160	"
942	3	Berlin Canal Co.	Shell Cr.	25	30	20	5	10.56	100,000	153960	"
943	3	Fred S. Van Riper	Big Horn River	1	11	3	4	2	500	160	"
944	4	D. O. Roberts	Spring Cr.	1	4	3	1	16	50	160	"
945	2	Thomas T. Howd	Big Goose Cr.	1.25	5	2	1.5	4	500	75	"
946	1	Valentine B. Hoffman	Snake River	2	6	4	2	2	2,000	1,280	"
947	2	John Crummay	Big Goose Cr.	.75	3	2	1	8	100	40	"
948	1	John H. Robins	Wagon Hound	.5	4	3	1	3	200	35	"
949	3	Eli McCord	Robinson Gulch	.75	3.5	2	1.5	12	50	35	1895
950	4	Eva A. McCray	Fontenelle Cr.	.25	5	4	1	8	100	40	1896

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
951	4	George T. Renshaw	Big Piney Cr.	1.75	4.5	3.5	2	5	$ 100	160	
952	1	William B. Barnes	Spring (S.W.¼ N.W.½ S. 23 T. 19 R. 82)	1	2	1	1	40	100	400	1896
953	1	" " "	Little Brush Cr.	2.25	2.5	1.5	1.5	75	250	400	*
954	1	E. E. Lufkin	Tributary of Pass Cr.	2.25	2.5	1.5	1.5	150	100	160	
955	2	Charles Waigele	Middle Fk. Powder River.	1.5	14	4	5	5.28	500	200	1896
956	3	William Sturgis	Beaver Cr. and Tribs.						6,000	700	1897
957	4	William Nye	Smith's Fork of Green River	1.5	2.5	1.75	3	3	200	160	1896
958	4	Martin Schwab	Salt River	.5	4	3	2	10	60	60	"
959	4	Charlotte Cook	Swift Cr.	.75	8	6		15	200	20	"
960	4	Jos. S. Nelson, Jr.	Flat Cr.	.75	3	2.5	1.5	10	60	40	"
961	1	Sarah A. Bristol	Bottom Cr.	1.5	4	2	1	7	175	160	"
963	1	" " "	" "	1	4	2	1	7	120	160	"
964	1	George P. Clayton	Hunton Cr.	.75	4	3	2	2	200	110	1897
965	1	John W. Griffin	Spring Cr.	.246	4.5	2.5	1	20	100	6	
966	1	" " "	" "	.871	4.5	2.5	1	20	200	100	
967	2	Charles K. Kamman	Beaver Cr.	.5	3	2	2	4	150	160	1896
968	1	V. C. Kerr	Turpin Cr.	6.5	14	12	4	4	800	1,920	1897
969	1	Olive G. Kerr	Little Pass Cr.	2	8	5	3	4	200	495	1896
970	4	Daniel O. Robinson	Fontenelle Cr.	2.5	5.5	4	1.5	5.28	300	320	1897
971	1	High Line Ditch Co.	Tribs. Big Cr.	3.5	10	8	2	13.33	2,500	1,540	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
972	2	D. A. Rinker	Red Fork Powder River	2	6	4	1	6	$ 600	180.37	1896
973	1	Jos. Dalles and A. Webb	Mill Cr.	2	5	2	1	4	500	449	"
974	4	Joshua Twichel	La Barge Cr.	1.5	3.5	1.5	1.5	5.28	250	40	"
975	4	" "	" " "	.75	3	2	1	5.28	150	60	"
976	2	John S. Benton	White Cr.	1.5	2	1.5	1	30	50	160	"
977	4	A. B. Clark	Phillips' Cr.	.5	2	1.5	.5	10	30	75	"
978	3	John Chittim	Chittim's Gulch	.587	4.5	2.5	1	6.66	100	30	"
979	1	Charles Stough	Sweetwater River	1	6	3.5	1.25	2.3	1,000	75	"
980	4	Henry J. Somsen	Coos Canon Spring	1.5	3	2	1.5	*	100	30	"
981	1	Alice C. Clayton	Batts Cr.	.75	6	4	1	6	300	50	"
982	4	Thomas P. Farmer	Cedar Cr.	1	6	5	3	20	100	160	"
983	1	James and Elizabeth Parr	Springs	1.5	4	3	1	5.28	250	150	"
984	1	Tom Sun	Oregon Gulch stream	1	8	2	1.5	5	220	100	"
985	1	Kenneth McDonald	Willow Creek	.75	4	3	1	7	175	50	"
986	4	G. W. Carleton, Geo. Snyder and W. W. Miles	Sulphur Cr.	1.6	4	2	1	10.56	175	160	1897
987	1	Patrick Sullivan	Willow Cr.	.5	3	2	1.5	5	200	17.2	1896
989	4	George A. Smith	Birch Cr.	.75	3	2	1	20	25	80	"
990	2	H. H. Reinecke	Sand Cr.	.375	2	2	1	7.3	50	10	"
991	4	Oren Broadbens	Middle Spring Cr.	.875	4	3	1	9	40	160	"
993	3	C. A. Sarver, J. F. Hash, C. S. and U. G. Eckard, A. Wickson	Stinking Water River	2.5	18	6	6	5	250	440	"

* 100 to 1,000.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,003	3	John Weintz, Henry W. and Nora O. Meyers	Paint Rock Cr.	2	14	6	4	4	$ 500	188.8	1897
1,004	3	F. C. Wells and M. Mason	Stinking Water River	3	8	6	2	7	1,000	440	"
1,005	3	Martha J. Williams	Beaver Cr.	2	16	4	5.5	5	400	360	"
1,006	3	Adam L. Gillis	No Wood River	1.25	24	6	8.6	3.5	600	240	1896
1,007	3	John M. Adams, et al	" " "	3.5	14	8	2.2	2	1,600	1,160	1897
1,008	3	Ira M. Avent	" " "	2	20	5	7.3	3.5	800	360	"
1,009	3	W. L. Shafer	" " "	2.5	12	5	3.5	4	500	160	"
1,010	3	Robert E. Rath	Shell Cr.	1	12	4	3	4	300	160	1896
1,011	1	John Field	Deer Cr.	1	5	4	2	4	250	90	"
1,012	2	Ira Vruewink	Middle Fork Powder River	1.5	5.5	4	3	5	300	37.5	1897
1,014	4	Mrs. James Davison	Ham's Fork	1.5	4	3	1.5	5.28	300	200	1896
1,021	4	William Gomm	Stanley Canon Spring	.25	1	1	1	200	50	*	"
1,022	1	John D. Paulson	Rankin Cr.	3.25	5	1	1	25	250	360	1897
1,024	1	Tom Sun and J. McFarlane	Sweetwater River	3.3					30,000	2,920	"
1,030	4	John Felter and J. B. Wilson	Bear River	2.875	5	2	2	5.28	300	320	"
1,039	3	Henry C. Lovell	Trapper Cr.	1.5	10	4	2.5	8	200	121.9	1896
1,043	3	John L. Burns	Bob Cat Cr.	2	6	2	2		500		1897
1,044	4	John Wood	Black's Fork Cr.	1.2	4	3	1	15	150	160	"
1,047	2	James Jarrard	North Fork Powder River	1	8	4	2	4.8	200	100	1896
1,052	4	Andrew Mattson	Spring Cr.	.75	5	3	1	8	200	80	1897

* Domestic.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,058	2	J. J. and H. R. Loller and E. McLaughlin	Piney Cr.	6.5	6	4	1	4.8	$ 1,500	360	1898
1,062	1	Henry Kincaid	Pass Cr.	4	4	3	1	20	300	160	"
1,066	4	David Doty	Two Springs	.5	2	1	1		25	25	1896
1,072	1	W. H. Thayer	Hunton Cr.	.625	6	4	1	5	100	50	"
1,073	1	" "	" "	.375	6	4	1	5	100	30	"
1,074	3	P. A. A. Cotter and R. Ashworth	Franc's Fk. of Grey Bull	1.25	8	4	2	5.3	300	360	1897
1,075	3	E. M. Hatton	Trapper Cr.	1.5	9	3	2.6	7	150	280	1896
1,081	1	Adolph Corrao	Box Elder	2	5	4	1	5	300	65	1897
1,082	1	" "	Corrao Springs	.25	3	2	1	5	50	66	"
1,085	1	W. H. Thayer	Thayer Springs	.5	6	4	1	5	100	50	1896
1,092	3	Emma Lanchburg	Stinking Water River	.435	3	2.5	.5	18.5	100	80	"
1,096	3	W. Jones and R. Ashworth	Grey Bull River	3	20	6	6.2	5.3	1,000	1,140	1897
1,101	2	P. S. Dowling	North Fork of Piney Cr.	2	7	4	1.5	5	800	158	"
1,106	1	J. L. Thomas	Lodge Pole Cr	1	4	3	1.5	6	100	136	1896
1,112	2	J. L. Fitzsimmons	East Indian Cr.	2.5	5	3.5	1		1,200	440	1897
1,113	2	John Roseberry	North Fk. Powder River	.5	8	4	1	8.1	500	134	1896
1,116	2	Burlington Gold Mining and Milling Co.	Kelly Cr.	.5	2	1.5	.5	20	200	*	1897
1,121	4	John Cunnington, Sr.	Branch of Bear River	.454	3	2	1	5.28	100	85	1896
1,136	3	P. L. McKee	Spring	.5	2	1.5	1	16	100	5	1895
1,138	4	T. E. Crawford, M. B. Crawford	Ditch Cr.	3.65	8	5	1	10.56	650	320	1897

* Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,175	4	F. L. Peterson and M. Detuiled	Little Gros Ventre River	1.75	5	3	1	8	$ 100	480	1897
1,182½	1	Charles Harden	Pass Cr.	1.5	7	6	1.5	10	200	505	1896
1,203	4	Elizabeth A. Boulter	Big Sandy Cr.	2	14	10	1.5	5	1,000		*
1,208	4	Wm. Sutton	Horse Cr. and Spring Cr.	3	15	10	3	8	500	1,000	
1,209	3	Mrs. M. E. Ervay	Deer Cr.	2	2	4	1	5.5	300	125	1897
1,215	1	C. H. and Rebecca Kose	Lost Cr. and Springs	1	2	1.5	2	6	600	200	*
1,216	3	A. L. Corey and Z. H. Daniels	Franc's Fork of Grey Bull	.66	10	10	3	5	5,000		1897
1,230	4	William T. Crawford	Holland Cr.	1.25	6	3	1	5	110	160	1896
1,286	1	John J. Iven	Fox Hill Cr.	1	2	2	1	50	25	20	1897
1,287	4	George Mattson and James Estes	Spring Cr.	2	6	4	1	5	200	220	1898
1,442	2	Harvey E. Dougherty	Hat Cr.	1008 ft					500	480	"
992	3	S. D. Canfield	N. and E. Fks. Trapper Cr.	10	7	4	1.5	5	1,500	480	1897
994	2	D. Parsons and H. Treichler	Reservoir	6.5	5	3	1	8	300	400	1896
995	3	Big Horn Basin Development Co.	Grey Bull River	20	37	22	5	4	150,000	30,040	1897
996	1	Wm. Werner	North Platte River	10	24	10	7	1.76	10,000	1,275	1898
997	4	Bruce, Peterson & Co.	Pine Grove Spring Creek	1.5	4	3.5	1	1	400	40	1897
998	1	Frank E. Lyon	So. Branch of Big Cr.	1	4	3	1	5.28	200	58	1896
999	1	Frank E. Lyon	" " " " "	1	4	3	1	5.28	100	40	"
1,000	4	Chas. Eddins	Spring Cr.	.75	4	3	2	14	100	160	1897
1,001	3	Sam'l Warden	Bridger Cr.	.653	6	4	1	520	125	40	1896
1,002	3	Lee Nansell, Clara F. and W. S. Collins	Paint Rock Cr.	1.25	8	4	3	4	300	69	"

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,013	2	G. J. and W. S. Jones	North Fork Powder River	1	9	6	1	5.5	$ 400	103.48	1897
1,015	4	Jno. Hardman	Dry Cr.	1.25	3	2	1	6	50	50	"
1,012	2	Carey S. McClure	Big Goose Cr.	2	19	3	8	4	750	40	"
1,017	3	H. Helms and Thos. Mills	Cherry Cr.	.3	6	25	1	10	100	18	"
1,018	3	D. W. Cook, Thos. L. and Jas. P. Shannon	Paint Rock Cr.	1.75	15	4	5.1	6	600	236.4	"
1,019	4	Sarah Ann Faulkner	Bear River	1.05	3	2.5	1	5.28	100	85	"
1,020	2	C. S. Swank and H. G. Turner	Reservoir	1.3	5	3	1	12	200	390	"
1,023	4	N. Anderson, M. Cooley and Fred Lallatine	Strawberry Cr.	4	6	5	2	14	400	480	"
1,025	4	Ole Jensen	Cottonwood Cr	.25	2	1.5	1.5	6	100	40	"
1,026	3	T. S. Mills	Cherry Cr.	1.75	12	4	1.5	8	600	95	"
1,027	1	L. McMullen and G. E. King	Bear Gulch and Spring Cr	.93	4	2	1.5	5	325		"
1,028	4	Fredrick Wolfley	Stuart Cr.	2.75	2	1.5	1	15	20	160	"
1,029	3	Albert A. Conant	Paint Rock Cr.	2.25	18	6	6	2.64	1,000	307.17	"
1,031	4	*McShane & Condon	Black's Fork Cr.	18.27	60	40	5	2	67,000	50,800	1898
1,032	4	Bruce, Peterson & Co.	Cottonwood Cr	1	5	4	2	3	8	80	1897
1,033	1	Albany Placer Mining Co.	Elk Cr.	.375	6	4	1.5	8.5	200	140	"
1,034	1	" " " "	Douglas Cr.	6.5	6	4	1.5	8.5	3,000	†	1898
1,035	3	J. B. Okie	Springs							‡	1895
1,036	1	Wyoming Development Co.	Laramie River						60,000	85,000	1899
1,037	3	J. B. Okie	Springs							‡	1895

* Assigned to Ft. Bridger Irrigated Land Association. † Mining. ‡ Stock Water.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'n					
1,038	3	J. B. Okie	Springs							*	1896
1,040	1	Wm. Storey	Douglas Cr.	5.2	8	6	1	5.3	$2,500	†	1897
1,041	4	Chas. R. Kelsey	Seven Springs	9				60	30,000	‡	"
1,042	3	Shoshone Land and Irrigation Co.	Shoshone River	30	65	50	6	2	100,000	24,560	1900
1,045	1	Joseph Wilde and Blanche T. Hunton	Laramie River	6.09	20	10	5	1.58	6,793.48	1,250	1898
1,046	3	Leonard Short	South Fork of Owl Cr.	1.75	10	6	2.5	2.64	600	65.8	1897
1,048	3	Henry River	Wood River	2.25	6.5	4.5	2	8	500	307.1	"
1,049	2	George A. McFarlane	Old Woman Cr.	1	3	2	2	7	200	55	"
1,050	1	Robert Jones	North Platte River	1	2	2	5		1,500	166.28	"
1,051	4	E. N. Carter, Mary E. Carter and Maurice Groshon	Black's Fork Cr.	.829	4	3	1	70.56	150	152	"
1,053	1	Mary, John, John W. and C. J. Weber	North Platte River	4.153	24	8	8	1.58	2,700	445	1898
1,054	2	W. T. Roberts	Clear Cr.	1.75	127	5	3.5	4.24	500	119	1897
1,055	2	Powder River Irrigation and Homestead Co.	Powder River	42	43	25	6	1.58	175,000	33,935	1900
1,056	1	Edward C. Merrill	Sweetwater River	2.5	5	3	1.5	4.5	1,500	179	1897
1,057	3	Frank Jones	Big Wind River	2	3	3	3.5	2	250	75	"
1,059	4	Amber Onyx Company	Smith's Fork Cr.	.719	31.2	26	2.6	8.07	1,500	85	"
1,060	1	Charles R. Macy & Co.	Big Box Elder Cr.	1	6	4	1	5	300	58	1896

* Stock Water † Mining. ‡ Municipal.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,061	2	John G. Bunney	North Fork Hay Cr.	2	3	3	1.5		$ 200	100	1897
1,063	3	William Boyd	Bear Cr.	2.75	5	3	4	12	700	170	1896
1,064	3	F. A. Stanley and A. E. Trump	Meadow Cr. and Reservoir	5	5	4	1		1,000	360	1897
1,065	1	B. F. Gump	Rawhide Cr.	1	3		1.2	7		65.6	
1,067	1	Evan J. Williams	Sweetwater	1.25	4.5	3.5	1	5	600	160	1896
1,068	3	Margaret McReery and Mike J. Lynch	Ten Sleep Cr.	1.375	6	4	1	8	300	133	1897
1,069	3	John S. Day	Bridger Cr.	2.236	4	3.5	1	8.9	700	440	"
1,070	3	I. H. Williams	Flume Ditch	2.25					1,500	500	"
1,071	1	Albany Placer Mining Co.	Douglas, Elk and Daves Cr.	3	5	2	2	10	5,000	1400	"
1,076	3	Henry Sherard	Big Horn River	.5	4	3	1	3	175	50	1896
1,077	3	George B. West	Horse Cr.	2	5	4	3	3.33	750	240	"
1,078	2	Joseph Williams	Middle Fork Powder River	.75	5	3	2	8	400	60	1897
1,079	1	Sophia Oberg	Brush Cr.	1	4	3	2	10.56	75	141.64	"
1,080	1	Kate N. Corbett	Elkhorn Cr.	.5	1.5	1.66	.66	7	30	14	1896
1,083	4	John Johnson	Muddy Cr.	.75	3	2.5	1	8	30	60	1897
1,084	4	Peter Haas	" "	.75	3	2.5	1	8	40	50	"
1,086	2	Milo A. Adams	Inyan Kara Cr.	2.5	4.7	4	1.8	4	600	160	"
1,087	1	James and Elizabeth Parr	Grand Encampment Cr.	6	7	5	1	1.5	2,500	320	1898
1,088	4	John Johnson	Muddy Cr.	.25	2.5	2	1	8	10	20	1897
1,089	4	Peter Haas	" "	.5	3	2.5	1	8	30	40	"
1,090	4	C. G. and P. J. Danielson	Bear River	1.923	6	4	1	8	300	250	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,091	1	Lillian McDonald	Willow Cr.	1.5	4	3	2	5	$ 400	236	1897
1,093	2	A. A. Hunter	Springs (S.E.¼ S. E.¼ S. 31 T. 53 R. 62)	.88					300	10	"
1,094	1	E. F. Hurdle	North Platte River	2	9	5	2	2	400	175	"
1,095	2	F. B. Fawcett, F. W. Coats, C. Bedell and J. L. Stotts	Springs	4	2	2	1	20	500	200	"
1,097	3	E. M., S. M. and J. A. Coburn, R. L. and H. K. Sweeney and W. E. Ingalls	Grey Bull River	4.5	11	8	1.5	6	1,500	1349	1898
1,098	4	D. P. Fayler	Fisherman Cr.	4	12	10	1.5	10.56	700	1163	1897
1,099	1	John Wright	Elk Cr.	1	5	3	1.5	5	450	152	1896
1,100	4	H. and John Todd, C. Larsen, R. Blattner, P. and C. Cjettrup and Lorenzo Davidson	Darby Cr.	2.5	10	8	3	26	1,000	1200	*
1,102	1	Snowy Range Placer Mining and Milling Co.	Douglas Creek	5.5	5	3	8		5,000	760	1898
1,103	2	A. A. and F. A. Hemler	Springs(N. E·¼ S.E¼ Sec. 6, T. 52, R. 62)	.31					250	70	1896
1,104	1	W. A. Denecke	Stinking Cr.	.75	5	3	1.5	7	330	43	1897
1,105	1	Nathan S. Bristol	" "	1.4375	5	3	1.5	7	700	140	1896
1,107	2	J. Monroe and R. T. Williams	Tongue River	2	5	3	1	4	1,000	140	1897
1,108	1	Wyo. Central R'y Co.	Casper Cr. Reservoir						1,650	†	"

* Not approved. † Reservoir.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	B.t'm					
1,109	3	Wyoming Central Railway Co. .	Bad Water Reservoir.						$1,500	*	1897
1,110	1	" " " " . .	Sage Cr. "						2,947.45	*	"
1,111	1	West Side Mining Association. . .	Snake River.	29	16	10	3	4	150,000	5,400	1896
1,114	3	M. Wyman, S. M. Laughlin, D. Moses, V. Grout, W. McDowell, and William Douglass	Ten Sleep Cr.		12	10	1.5	4.16	1,500	438.5	1897
1,115	2	Alfred Johnson.	Clear Cr.	6	5	3	1	5	400	159.75	"
1,117	2	A. J. Sinsel	Big Piney Cr.	5.25	7	4	1.5	5.28	1,800	131	"
1,118	2	Eva Davis	Springs (N.E.¼ N. E.¼ S. 10 T. 52 R. 62)	.225	3.5	3	2	26	125	40	"
1,119	3	Jno. B. Menardi.	Porcupine Cr.						50,000	†	"
1,120	2	L. P. Hamilton, A. J. Sinsel and H. Sturdevant	Big Piney Cr.	5.25	7	4	1.5	5.28	1,800	240	"
1,122	1	C. F. Rietz.	Big Laramie River.	2	5	4	1	6	300	129.6	"
1,123	1	" "	" " "	1	5	4	1	6	200	44.8	"
1,124	4	W. C. Cunnington	Branch of Bear River. . . .	1	4	3	1	5.28	200	200	"
1,125	2	Burlington Gold Mining and Milling Co.	South Fork of Clear Cr. . .	.5	2	1.5	1	20	500	†	"
1,126	2	Burlington Gold Mining and Milling Co.	" " " " . . .	.5	2	1.5	1	20	500	†	"
1,127	2	Sherman M. Williams.	Little Big Horn River. . . .	.094	4	2	1	8	100	†	"
1,128	1	Herbert O. Wilkins.	Dry Cr.	.9	6	4	1	5	100	105	"

* Reservoir. † Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions: Length in Miles	Dimensions: Width: Top	Dimensions: Width: Bot'm	Dimensions: Depth	Dimensions: Grade, Feet per Mile	Estimated Cost	No. of Acres	Date for Completion
1,129	1	Herbert O. Wilkins............	Dry Cr..................	.7	6	4	1	5	$ 100	58	1897
1,130	1	" " "	East Fork of Dry Cr.....	.2	5	3	1	5	50	30	"
1,131	3	Big Horn Gold Mining Co......	Bear Cr.................	.28	3	2	1	100	100	*	1896
1,132	3	" " " " "......	" "..................	.28	3	2	1	100	100	20	"
1,133	1	Stephen Smith.................	Indian Creek............	6.25	5	3	1	5	50	42	"
1,134	3	A. A. and C. B. Kershner......	White Cr................	2	9	4	3	6	250	189.3	1897
1,135	2	William F. Donnly............	Powder River...........	6.75	40	20	10	1.2	7,000	1,108	1898
1,137	1	Walter A. Blackmore..........	Goose Cr................	1.25	5.5	3	2.5	6.5		83	1897
1,139	2	E. L. Whiting, W. H. and E. E. Edelman, N. E. Jones and O. Palmer	Branch Little Big Horn R.	2	8	2.5	2.5	15.3	1,800	*	"
1,140	2	W. H. Condart and O. Palmer..	" " " " "	1.5	9	3	3	15	1,000	*	"
1,141	2	James McCormick.............	" " " " "	.28	4	2	2	15.3	400	*	1898
1,142	2	W. G. Aber....................	Wolf Cr.................	.057	1	.5	.5	20	75	1	1897
1,143	2	" "	Seepage Water..........	1.1	4	2	1	12	50	35	"
1,144	3	Charles Bader................	Badwater Cr............	.5	3	3	1	10	100	46.5	"
1,145	1	W. S. Kimball................	Claud Cr...............	1	5	2.5	2	6	150	190	"
1,146	3	Thomas L. Collins............	Seven Springs...........	.5	4	3	1	5	300	125.7	"
1,147	3	S. D. Close and W. E. Bader...	Owl Cr.................	2.5	12	6	2	5.2	800	622.39	"
1,148	3	John J. Collins...............	Alkali Cr..............	.75	24	5	8	5	300	105	"
1,149	2	Abasorka Mining Company.....	Little Big Horn River....	.59	6	3	2		500	*	1898
1,150	2	Hiram Sturdevant............	Big Piney Cr...........	5.25	7	4	1.5	5.28	1,800	160	"

* Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,151	2	Yarlot, Shaw & Smith	Gold Run	.5					$ 300	*	1896
1,152	2	" " "	South Fork Little Big Horn River	1.25					800	*	"
1,153	2	E. E. Miller and F. G. S. Hesse	Springs	6	8	6	1	5.28	1,200	2,000	1898
1,154	2	F. W. Ketcham	Little Horn River	.39	8	4	2	8	2,000	*	1897
1,155	2	" "	Dayton Gulch	.108	4	2	1	10	5,500	*	"
1,156	1	J. C. Cantlin, J. A. Meyers and A. R. and L. A. Gates	Sweetwater River	6.3	10.5	3	1.25	3.7	1,150	1,145	"
1,157	3	W. Mead and C. W. Hooker	Stinking Water River	2.25	17	5	6	3.33	300	368.9	1897
1,158	3	Geo. H. Keeney and H. L. Early	" " "	30.48	25	15	4	2	75,000	26,400	1900
1,159	1	Humphrey R. Lloyd	Springs (N.½ N.E¼ Sec. 25, T. 30, R. 83)	.5					1,000	160	1897
1,160	2	N. F. Hilliard	South Fork Little Big Horn River						200	*	"
1,161	2	S. M. Williams	Branch of Porcupine Cr.	.18	4	2	1.5	30	200	*	"
1,162	2	Perry Harbison	East Fork Sackett Cr.	.25	2	1	.5	30	50	5	1896
1,163	4	Henry's Fork Canal Co	Henry's Fork Cr.	8.25	10	8	2	4	2,000	1,500	1898
1,164	1	Harry A. Chapman	Slough (Sand Cr.)	.49	1.5	1.5	1	20		35	1897
1,165	3	Little Horn Mining and Milling Co.	N. Fork Porcupine Cr.	.15	4	2	1.5	12	200	*	"
1,166	1	Ed. Stemler	"66" Branch	.5	5	3	1	10	200	75	1896
1,167	1	Geo. H. Binford	Cottonwood Cr	.75		3	1		50	10	1897

* Mining

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,168	2	Tewksbury & Sheard Co.	Big Goose Creek	1.1					$ 4,400	*	1897
1,169	2	C. L. Tewksbury	Tongue River	2.3				196.1	12,500	†	"
1,170	2	C. L. Tewksbury and J. C. Wells	Little Horn Canon	2.08				140	8,500	*	"
1,171	2	A. F. Washington	Gold Run	.5	4	2	1	20	200	*	"
1,172	3	Jos. Moore	Meadow Cr.	.75	3.5	3.5	1	10	150	76	"
1,173	3	B. F. Bausman and Mrs. M. C. Moore	Bridger Cr.	3.25	16	8	5	5	500	347	"
1,174	3	B. F. Bausman and Mrs. M. C. Moore	Lysite Cr.	1.25	5	4	1	10	200	188	1897
1,176	4	L. Nowlin and Jno. Emery	Little Gros Ventre River	4.5	10	8	1.3	12	500	480	1898
1,177	2	Little Horn Mining and Milling Co.	Branch Little Horn River	.28	4	2	1.5	10	1,000	*	1897
1,178	1	Emile Jammerman	Sweetwater River	2.15	5	3	1	5.28	285	116	"
1,179	2	Francis M. Vroman	Stockade Beaver Cr	2.5	18	15	3	2	5,000	‡	1898
1,180	1	Matthew Campfield	Spring	.5	2	1.5	1		50	55	1897
1,181	1	Jno. Ryan	Laramie River	1.7	16	6	5	1.5	300	135	"
1,182	2	Ida M. Hecht	Big Goose Cr.	2	4	1.5	8	5	425	40	1896
1,183	2	Owen Bros.	Branch of Five Mile Cr.	2.25	5	3	1	8	300	336	1897
1,184	2	Jay E. Haines	Spring	.32					250	10	"
1,185	1	Wm. Clark	Middle Fork Casper Cr.	.5	4	2	1.5	8	100	‡	"
1,186	4	W. F. and R. W. Vickery	Dry Piney Cr.	7.51	6	5	1.5	5.28	650	345	"
1,187	1	T. B. Hicks	Horse Cr.	5	18	12	3	4.2		15,000	1898

* Mining. † Milling, etc. ‡ Reservoir

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
1,188	3	Mark R. Perkins	Branch of Porcupine Cr.							*	1898
1,189	3	Asa Mercer, et al.	Medicine Lodge Cr.	8	12	10	1	4.2	$ 5,000	1,120	"
1,190	4	Wm. F. Rigby, et al	Teton Cr.	2.75	12	10	2	5.28	1,000	640	1896
1,191	3	John Donahue	Medicine Lodge Cr.	1.25	10	4.5	4	4	250	106	1897
1,192	1	E. M. Johnston	Sage Cr.	1.75	5.5	4	1.5	3	700	250	"
1,193	2	Francis M. Vroman	Whoop-Up Cr.	2	18	15	3	2	4,000	†	1898
1,194	1	Louis M. Sederlin	Dry Gulch	.5	1.25	1.25	.66	20	25	25	1896
1,195	2	Francis M. Vroman	Main Beaver Cr.	8.2	15	10	2.5	2	15,000	1,940	1898
1,196	1	John Moran	Elkhorn Cr.	.62	4	2	1	11.5	125	24	"
1,197	1	" "	" "	1.51	6	4	1	13.4	500	101	1897
1,198	1	James Canda	" "	.42	5	3	1	12.39	200	27	"
1,199	1	John Moran	" "	1.226	6	4	1	13.5	350	80	"
1,200	2	Granger Ditch Company	Tongue River and Fool's Cr.	35.13	12	7	2.5	8	50,000	17,800	1899
1,201	4	Jos. Freestone	Black's Fork Cr.	1.04	3.5	2.5	1	15	150	130	"
1,202	1	Latham Davis	Prairie Spring	2.5	6	4	1	10	1,600	410	‡
1,204	4	Green River Basin Land and Canal Co.	Green River	97					1,500,000		‡
1,205	4	Green River Basin Land and Canal Co.	Black's Fork	30.5	32	18	7	1.056	85,000		‡
1,206	1	Chas. A. Sherman	Springs	.5	5	3	2.5	7	500	40	‡
1,207	3	W. F. Cody and W. E. Hymer	Hot Springs	.5					5,000		‡

* Mining. † Reservoir. ‡ Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade Feet per Mile			
1,210	2	Chas. B. Jones	East Branch Cruse Cr.	.5	3	2	1	20	$ 100	120	†
1,211	4	H. C. Bigelow	Black's Fork	7	30	25	1	7.92	10,000		†
1,212	2	Milton Carter	Branch of Five Mile Cr.	1.75	5	3	1	8	180	90	1897
1,213	4	Geo. Durnford and Peter Danks	Bear River	.5	4	3	1	7.5	50	85	"
1,214	2	Henry A. Coffeen	Little Big Horn	.5	7	4	2	20	600	*	"
1,217	2	H. L. Primrose and R. W. Abbott	Little Horn River	.38	8	4	2	15	1,500	*	"
1,218	1	Ed. A. Buck, et al	Big Laramie River	16	14	11	1.5	5	4,000	2,520	1898
1,219	1	Jno. Dolling	Fish Cr.	.75	3	3	1	90	100	260	1897
1,220	1	Carbon County Gold Mining and Milling Co.	Cooper Cr.	1	3.5	3	1.5	8	500	*	1896
1,221	4	Chas. B. Holden	South Piney Cr.	1.75	6	4	1	5.28	300	320	1897
1,222	3	I. H. Williams and J. J. Marshall	Alkali Cr.	4	5	3	1	75	500	600	"
1,223	2	Peter Griffin	North Fork Powder River	1	10	4	1	5.28	1,000	290	1896
1,224	1	Geo. W. Kelley	Mullen Cr.	1	6	5	1.5	10	200	150	"
1,225	2	Francis M. Vroman	Beaver Cr.	5.3	14	8	3	2	5,000	1,265	1898
1,226	3	Josie P. Beggs	Deer Cr.	.75	4	3	1	3.5	150	80	1896
1,227	3	H. S. Hoffman, C. R. Johnston and S. Chilcott	Shoshone River	2	10.5	7.5	1.5	3.33	500	465	1897
1,228	3	J. L. and Clara C. Hays	Sage Cr.	2.5	18	6	3	6	300	340	"
1,229	4	J. Brice and D. Barton	Bear River	.25	4	3	1	5.28	50	55	"
1,231	2	Horace Cole	Springs	.72				320	400	20	1898
1,232	1	M. B. Ledford	Hynds Slough	1.5	5	4	2	5	200	160	1896

* Mining. † Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,233	2	A. A. Hemler	Springs	1.77	3	2			$ 350	160	1897
1,234	2	Alger & Downer	South Piney Cr.	.77	11	5	3	5.28	300	†	1896
1,235	1	Louis M. Sederlin	Sederlin Cr.	.75	2	1.5	1.5	12	100	100	"
1,236	2	Bald Mountain Placer and Mining and Bald Mountain Townsite Co.	Little Big Horn River	2	7	4	1.5	55	400	‡	1897
1,237	1	O. P. Gray	Sweetwater River	1.14	6	3	1.2	2.37	200	88	"
1,238	1	T. Sun and J. G. Macfarlane	" "	21.12	3			47.35	225,000	5784.4	1898
1,239	1	Jos. S. Hosack	Duck Cr.	.33	3	2.5	1	4		25	1896
1,240	1	" "	Goose Cr.	.33	2.5	2	1	8	100	20	"
1,241	2	Alti Pendergraft	Shell Cr.	.5	6	4	1	5.28	100	160	1897
1,242	2	Geo. W. Barlow	South Piney Cr.	.5	5	2	1	5.28	300	40	"
1,243	2	C. J. Dzendolet	Six Mile Cr.	4.5	5	3	1	10	450	293	1898
1,244	1	F. E. Place and J. Crouse	Bates Cr.	4.5	21	10	5	2.64	2,500	880	"
1,245	1	Geo. W. Snow	Spring						10	§	1896
1,246	4	Jos. S. Nelson, Jr.	Flat Cr.	2	5	3.5	1.5	7	100	100	1898
1,247	1	E. A. Harnden	Foote Cr.	1.33	3	2	1	16	200	160	1897
1,248	2	Jno. R. Brown	Johnson Cr.	2	4	3	.66	10	300	50	1896
1,249	1	*C. P. Richie and J. P. Hughes	Lake Cr.	1.75	4	3	1.5	10	1,000	200	"
1,250	1	Albert Webb	Mill Cr.	1	5	3	1.25		150	160	1898
1,251	1	Albert A. Harper	Whiskey Cr.	2.2	5	3	1	7	165	123.3	1897
1,252	1	" "	" "	1.9	5	3	1	7	142.50	351.7	"

* Assigned to Gold Exploiting Co. † Milling. ‡ Mining. § Stock.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,253	1	E. Palmquist and A. Mayquist..	Saw Mill Cr.	1.2	4	3	1.5	5	$ 750	*	1898
1,254	3	H. L. Primrose, J. W. Robinson and A. H. Chapman	Porcupine Cr.	.169	8	4	2	10.5	1,200	*	1897
1,255	1	A. Hardin	Pass Cr.	1.5	3	2.5	1	5	150	150	1898
1,256	3	J. E. Callaway	Twin Cr.	1	4	2	1	7	200	35	1897
1,257	3	" "	South Fork Stinking Water River	1.5	15	4	5.1	5.28	600	44.6	1898
1,258	2	T. R. Bruce	Old Woman Cr. and Spring Branch	.29	3	2	1	5	250	40	1897
1,259	1	Gold Exploiting Co...........	Rock Cr.	10	16	12	4	5	25,000	2,360	1898
1,260	2	A. L. Pease	Alkali Cr................	.079	3	1	1	40	100	*	1897
1,264	1	E. T. and Jas. Graham.........	Sweetwater River........	3	10	8	1	4.5	1,500	283	1898
1,261	2	H. E. Sickler.................	Wagner Prong, Dutch Cr.	1.3	5	3	1	8	400	45	1897
1,262	1	E. T. Graham and E. H. Farnsley	Sweetwater River........	3	8	6	2	4.5	800	230	"
1,263	1	" " " "	" "	2.25	7	5	1	4.5	600	135	"
1,265	2	Estate A. W. Fordice (deceased)	Seepage water	.71	5	3	1	8	150	70	"
1,266	4	John Golding	La Barge Cr..............	1.57	5	3	1	5.28	100	160	"
1,267	2	W. S. Hill....................	Red Fork Powder River..	.75	8	4	1	5.28	600	69.2	"
1,268	1	C. S. Crysler.................	Rock Cr..................	2	12	10	2	50	1,800	*	"
1,269	1	" "	" "	2	12	10	2	50	800	*	"
1,270	1	" "	Three Mile Cr.	1.17	10	8	1.5	4	1,900	*	"
1,271	1	" "	Rock Cr..................	3.45				115	10,000	*	"

* Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,272	1	C. S. Crysler	Flume Cr.		4	2	1	5	$ 200	*	1898
1,273	1	" "	" "	.125	4	2	1.33	5	200	*	1897
1,274	1	" "	" "	.125	4	2	1.33	5	200	*	1898
1,275	1	Delia M. Fisher	Crooks Cr.	1.25	4	3	1	5.25	500	79	1897
1,276	4	Geo. A. Crofutt	Black's Fork River	24.56	43	33	5	1.056	60,000	50,070	†
1,277	4	McShane & Condon	Branch of Black's Fork River	6.86	30	28	1	7.92	10,000	12,090	†
1,278	3	F. S. and E. J. Strong and L. A. Mayne	Stinking Water River	5	18	8	1.5	5	2,000	720	1897
1,279	2	Frank Strong	Porcupine Cr.	.132					150	*	"
1,280	2	William Scarmellini	Bear Cr.	2	5	3	1	30	300	220	"
1,281	4	J. A. and M. J. Westfall, H. C. Johnson and J. H. W. Strong	W. Fork New Fork Cr.	2.75	16	14	2	17	700	394	1898
1,282	1	C. S. Crysler	Rock Cr.	6.5	10	6	2	4	2,500	*	"
1,283	1	W. L. Hughes	Pitch Pine Cr.	1.25	3.5	2	1.16		150	30	1897
1,284	3	George W. Woolf	Sioux Cr.	.275	3	3	1	10	25	10	"
1,285	3	George W. Woolf	Badwater Cr.	.75	3	3	1	10	125	47	"
1,288	3	A. T. Wilson and H. Piercy	Beaver Cr.	5	9	5	2	8	5,000	2,720	1898
1,289	2	Fred Waegele	South Fork Crazy Woman	.5	7	3	1	5.23	500	13.4	1897
1,290	2	" "	Steel Cr.	1	16.5	3	1	5.28	1,000	102	"
1,291	2	Rock Creek and Piney Reservoir and Ditch Co.	South Fork Piney Cr.	2.5	18	10	4	4	7,000	12,500	1899

* Mining. † Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	Source of Appropriation	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,292	1	John Iven	Pass Cr.	2	4	5	1	5	* 200	120	1898
1,293	2	Edward Harlow	Spring	.3	1.66	1.66	.83	52.8	60	11	*
1,294	4	J. R. Moffett	[illegible] River	.875	3	2.5	1.5	7	160	160	1897
1,295	2	Thomas Feegnard	Beaver Cr.	1	6	3.5	1.5	6	500	65	"
1,296	3	P. and A. Black and R. B. Hintage	Stinking Water River	3	14	6	1.5	5	800	440	"
1,297	1	D. L. Clark	Botes Cr.	2.25	10	8	1	6.5	800	316	1898
1,298	4	James L. May	Ditch Cr	2.25	6	4	1	20	100	160	1897
1,299	1	Louis Wurl		.5			1	3	50	40	"
1,300	3	Francis H. Welty	Horse Cr.	3		4	2	6.66	600	230	1898
1,301	4	Laura Nowlin	Sheep Cr.	.5	4	3	1	40	50	52	1897
1,302	4	" "	Holland Cr.	.25	2	1.5	1	30	15	2	"
1,303	1	W. Whittingham and J. Smith	Cooper Cr.	.246	3	2	1	20	150	20	"
1,304	2	Lydia Hilman	Hilman Cr	.75	2	1.5	1	10	150	62	"
1,305	1	A. E. McFarlane	Runningwater	.25	2	2	.3	2	100	10	"
1,306	3	Clark Placer Mining Co.	Warm Spring Cr.						2,866	†	1898
1,307	3	J. A. McAvoy	Little Popo Agie	13.5	8	8	4	6	80,000	14,120	1900
1,308	2	Thomas G. Smith	Canon Cr.	1	5	3	1	10.56	300	240	1897
1,309	3	A. S. Austin	Ten Sleep Cr.	1	3.5	3	1	15	300	66	"
1,310	1	George W. Hunter	Little Beaver Cr	1	4.5	3	1.2	7	150	58	1896
1,311	1	" " "	" " "	.75	5	4	1.08	8	200	240	"
1,312	1	" " "	" " "	.5	4	3	.66	7	100	20	"

* Not approved. † Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,313	3	E. and Thomas Lanchbury	Springs	3.5	6	4	1		$ 1,000	244	1898
1,314	1	John J. Holliday	Deer Cr.	.75	2	.33	1	8	75	50	1896
1,315	1	W. H. Loomis	Chugwater Cr.	1.5	9	5	2	5	300	220	1897
1,316	3	T. F. Nelson and J. S. Dillingham	Paint Rock Cr.	1.75	3	3	1	15	200	146	"
1,317	2	Hart Bros.	Slater Cr.	1.5	5	3	1	10	150	131	1898
1,318	2	Samuel Garvin	Crystal Springs Cr.	3	5	3	1	13	850	320	1897
1,319	3	C. J. Heneman et al	No Wood River	5	22	10	6	5	2,600	800	1898
1,320	4	C. L. Byrne	Big Muddy	.37	2.5	2	1		50	30	1897
1,321	4	C. L. Byrne	" "	.21	2.5	2	1		50	60	"
1,322	3	W. and L. A. Walter	Big Horn River	9	9	6	1.5	2	1,500	357.76	1898
1,323	2	Rock Creek and Piney Reservoir and Ditch Co.	South Fork Piney Cr.	1.75	18	10	1	4	7,000	12,500	1900
1,324	3	Sherman Long	No Wood River	2	8	6	1.5	5.2	300	35	1897
1,325	3	Nelson Yarnall	Big Wind River	2	6	3	1.5	6.66	300	120	"
1,326	2	John R. Brown et al	Clear Cr.	5	5	4	1	17	1,200	530	"
1,327	1	W. Hallisey et al	Big Cr.	10.61	11	10	2	2.61	8,000	3,600	1900
1,328	4	G. W. and William Kissinger	Ditch Cr	3	6	4	1	15	200	280	1897
1,329	1	Annie Yoder	Big Horse Cr.	2	7	6	1	3	250	100	"
1,330	2	John King	Big Piney Cr.	3.5	6	4	1	5.28	1,200	160	1898
1,331	2	W. Wagner and R. A. Frazier	Columbus Cr.	3.75	5	3	1	12	1,000	375	1897
1,332	4	E. Bagley et al	Darby Cr.	2.675	14	12	2	26	3,500	2,100	1899

Permits to Appropriate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Length in Miles	Dimensions				Estimated Cost	No. of Acres	Date for Completion
					Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
1,333	4	Ervin Wilson et al	Little Gros Ventre	4.5	12	10	2	10	$ 8,000	1,380	1897
1,334	2	C. H. Reynolds	Big Piney Cr.	2	6	4	1	5.28	1,200	480	1898
1,335	2	Minnie Stover	Tongue River	1.5	6	4	1.5	2	1,000	115	"
1,336	4	John Cross	Big Muddy Creek	1	5	3	1.5	8	300	80	1899
1,337	4	James Guild et al	" " "	8.75	10	6	2	10	1,000	805	"
1,338	2	C. L. Tewksbury et al	Little Horn Canon	2.08				400	8,500	*	"
1,339	2	C. L. Tewksbury	Tongue River	2.52				226.3	12,500	*	"
1,340	2	Tewksbury & Sheard Co.	Big Goose Cr.	1.1					4,400	*	"
1,341	3	L. B. Matthews et al	North Beaver Cr.	2.75	6	3	2	10.6	400	154	1898
1,342	1	B. N. Tibbals	Willow Cr	.23	5	3	1.5	15.4	500	*	"
1,343	2	W. H. Hammontree	Rapid Cr.	2.25	6	4	1	20	1,600	318	1896
1,344	4	Jane Cook	Rock Cr.	1.5	3	2	1		250	210	1897
1,345	1	Schoonjaus & Bosanquet	Bush Cr.	1.5	4	3	1	3	50	320	†
1,346	3	Charles B. Wiggins	Pony Cr	2	5	4.5	1	6.66	300	120	1898
1,347	3	John Seaman et al	No Wood River	4	10	8	1	3.5	1,500	480	"
1,348	1	Keck & Olson	North Platte River	2	16	6	5	1.5	1,000	204	"
1,349	3	James J. Atkins	Bear Cr.	1	6	4.5	1	6.66	300	170	1897
1,350	3	" " "	" "	3.5	8	6	1	6.66	800	200	1898
1,351	3	Leonard Short	North Fork Owl Cr	1.5	7	5	1	5	150	60	"
1,352	1	Avery T. Holmes	Little Beaver Cr	.75					8,000	*	"
1,353	4	J. B. Curtis	S. Piney Cr	.4	4	3	1	18	50	74	1897
1,354	4	Labon Heward	Branch of Bear River	1.5	4	3	1	6.6	400	66	1898

* Mining. † Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,355	2	J. B. Menardi	Little Horn River	1.2					$ 6,000	*	1899
1,356	2	" "	" " "	.35					1,500	*	"
1,357	1	Kate Bowie	Bates Cr	1	13	5	4	5.28	150	440	
1,358	4	Albert Bayer	Green River	3	5	4	1	4	200	120	1898
1,359	4	D. Timmins et al	Little Gros Ventre Cr	2	8	6	1.3	10.56	500	500	"
1,360	1	John Munson	Ingal Cr	.75	4	2	2	5	250	80	"
1,361	1	S. J. and Barrett Cole	Big Laramie River	3.5	10	7	1.5	2	1,200	256.22	"
1,362	1	A. W. Ayres	La Prele Cr	.75	8	4	2	7	300	100	"
1,363	3	Jos. and A. J. Nordstrom	Big Horn River	3.5	6	4	1.5		900	265	1899
1,364	1	Pat Tobin	Alkali Gulch	.75	3	2	1	5	50	55	1897
1,365	3	H. W. A. Wostenburg et al	Big Horn River	7	9	6	1.5	2.68	2,000	1,135	1899
1,366	1	August Hurley	Lincoln Gulch	1.75	3	2	2	6	700	*	1898
1,367	2	Jos. Dittinger	Timber Gulch	.5	4	3	1	15	100	40	1897
1,368	1	Edward M. Yates	Laramie River	1.7	7	4	1	1.58		75	1899
1,369	4	James Miller et al	Miller Cr	.5	4	3	2	20	75	80	1897
1,370	1	Carbon County Gold Mining and Milling Co	South Dutton Cr	.06				†	700	*	1896
1,371	4	A. W. Kidman et al	Smith's Fork Cr	1.5	4	3	1.25	15	250	300	1897
1,372	2	John W. Stevenson	Clear Cr	7.5	4.83	3	.83	5	600	150	1898
1,373	4	John P. Smith et al	Smith's Fork	.5	4	3	1	7.92	100	141	1897
1,374	4	J. C. Smith	" "	.16	4	2	1.5	8.25	50	77	"
1,375	4	Carl E. Oline et al	Branch Black's Fork	7.33	8	3	3	8	2,000	2,916	1898

* Mining. † Pipe Line.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
1,376	1	S. P. Lindgreen	Lindgreen Springs	.37	4	3	1	4	$ 100	40	1897
1,377	1	Levi C. Bell	Middle Casper Cr	.56	3	1	2	7	150	75	"
1,378	4	Levi Lehmer et al	Middle Piney Cr	.33⅓	5	4	2	10	500	*	"
1,379	1	Jesse Johnson	Willow Cr	1.5	3.5	2	2	13	250	110	"
1,380	1	" "	" "	.5	4	3	2	13	100	35	"
1,381	3	Charles and Meta Wells	Red Bank Cr	2.5	4	4	1	16	350	91.5	1898
1,382	2	James H. Magoon	Young Woman Cr	.5	2.6	2	1.5	10	100	40	1897
1,384	1	Albert J. Bothwell	Granite Knob Spring	.05	2	1		20	10	1,760	"
1,385	1	Luther C. Morrison	South Fork Casper Cr	2.5	5.5	3	2.5	4	1,800	320	1898
1,386	3	Robert N. Tharp et al	No Wood River	5	12	8	1.5	2	2,000	460	1899
1,387	4	Orson Strong	Smith's Fork Cr	.04	4	3	1	8	20	130	1897
1,388	2	J. S. Tutty	Reservoirs Tutty No. 1 & 2	1	3	2	1	10	500	75	1898
1,389	2	Lewis Opel	North Fork Powder River	1.5	6	4	1	5.28	1,000	72	"
1,390	4	Oscar Erickson and A. Polson	Smith's Fork Cr	2	4.5	3	1	15	250	320	1899
1,391	4	H. Strong and W. H. Stevens	" " "	.75	4	2	1	10	50	122	1898
1,392	4	Hyrum Strong	" " "	.06	4	3	1	10	20	68	"
1,393	2	C. Perry Cooper	Reservoir, South Fork of Five Mile Cr.	1.25	4	3	.08	10	150	108	"
1,394	3	John F. Hagberry et al	Wood River	.75	6	4	1	6	150	74	"
1,395	3	William Hagberry et al	Wood R. & Quaking Asp Cr	4	10	8	1	5	500	182	"
1,396	3	Frank Hagberry et al	Wood River	1.25	6	4	1	5	200	95	"
1,397	3	J. F. Hagberry and T. Z. Brown	Wood River	1.5	6	4	1	6	300	93	"

* Milling.

Permits to Appropriate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,398	1	Daniel J. Magoon	Muddy Cr	.5	4	3	1	4	$ 250	40	1898
1,399	1	William T. Peryam	Grand Encampment Cr	1.5	6	4	2.5	13	800	135	“
1,400	1	“ “ “	“ “ “	.75	6	5	2.5	13	350	45	“
1,401	1	C. H. Jones	Little Laramie River	.19	2	2	2	5	10	40	1897
1,402	2	C. B. Holmes	Tributary Taffner Cr	1	4	2	1	15	200	165	1898
1,403	3	L. D. Mills	No Wood Cr	.75	12	4	5.5	5	250	62	“
1,404	4	Webster La Plant	Little Gros Ventre Cr	.5	5	3.5	1.25	10	75	160	“
1,405	4	J. W. Haddenham	Trail Cr	1.25	3	2	1	10	100	25	“
1,406	2	J. L. Davis and E. C. Spencer	Clear Cr	1.75	7	5	1	3.7	2,500	415	“
1,407	3	Frank M. Young et al	Grey Bull River	1.5	7	5	1	5.28	800	120	“
1,408	4	Ira Dodge	Willow Cr	2.7	5	4	1	4	350	305	1897
1,409	1	R. C. Hargraves	Musk Rat Cr	.75	6	4	2	4	200	70	1898
1,310	1	Erick Haglaud	Medicine Bow River	.71	2.5	1.33	.66⅔	10	20	70	“
1,411	2	W. M. Burks	Stockade Cr	.5	3	1	1	15	15	350	“
1,412	4	Stanley Murdock et al	Green River	6	13	12	2	4	1,000	1,580	1899
1,413	1	Henry Ritterling	Laramie River	1	6	4	1	1.58	500	57.75	1898
1,414	1	Therkilson & Carlin	Hay Cr	.81	8	4	2		1,250	82.7	1899
1,415	3	Lewis St. Jermain	Beaver Cr	2.5	5	3	1		400	118	1898
1,416	1	J. A. Johnston et al	Grand Encampment Cr	.59				4.5	6,000	160	1899
1,417	1	Dennis J. Sheehan	Crooks Cr	1.5	6	4	1	6.66	150	190	1898
1,418	1	D. J. Sheehan	Crooks Cr	1.75	6	4	1	6.66	200	120	“
1,419	1	Charles Harden	Lee Cr		4	3.5	8			80	1897

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,420	1	William C. Hendricks	East Fork of Muddy Cr	.75	5	3	1	4	$ 100	25	1898
1,421	1	Walter A. Lantz	Blue Grass & S. Blue Grass	.53	4	4	2	3.5	78,000	*	"
1,422	1	W. F. King	Dry Cr	.25	10	7	1.5	5	500	227	"
1,423	2	Louis E. Devlin	Spotted Tail Cr	1.25	2	1.33	.11	6.66	800	*	1897
1,424	2	Mrs. Jane Pennoyer	Young Cr	.5	3.5	1	1	6	100	35	1898
1,425	2	J. A. Harding	Springs at head of Cabin Cr. and Sheep Cr.	5	5	3	1	8	600	280	1899
1,426	2	Abel S. Heald	Cave Cr	.28				40	50	7	1898
1,427	2	" "	" "	.5	2	1	.5	6.8	50	10	"
1,428	2	J. M. Ferrin	Black's Fork Cr	6	20	16	2	5.28	8,000	1,076	1899
1,429	4	J. B. and Daisy Curtis	South Piney Cr	1	7	6	1.5	6.66	200	465	1898
1,430	4	Minnie R. Swan and J. B. Curtis	Spring Cr	.4	5	4	1	12.6	60	145	1897
1,431	4	James Budge et al	Gros Ventre River	5.5	12	10	1	10.56	1,200	1,080	1899
1,432	3	Edward Towns	Elkhorn Cr	1.12	5	3	1.5	40	2,000	420	1898
1,433	1	Fred W. Foxton	" "	.62	5	3	1	7	150	32	"
1,434	1	Tom Sun	S. Fk. Grand Encampment	3.62	10	6	1.5	5.28	3,000	1,330	1899
1,435	1	" "	" " "	2.37	10	6	1.25	5.28	2,000	1,600	"
1,436	2	Argus B. Ennis	Springwaters Elk Draw	.18					25	5	1898
1,437	2	Argus B. Ennis	Spring and Springwater of Elk Draw	.11					40	2	1899
1,438	2	Maggie E. Addleman	Rapid Cr	4	5	3	8	10	250	125	1898
1,439	2	" " "	Small Cr	2.25				10	75	50	"

* Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,440	1	Frank O. Harrison	Rock Cr.	.08	4.5	4	1	14	$ 50	200	*
1,441	4	George Smith	Lake Cr.	1	4	3	1	8	375	215	1897
1,443	1	The Douglas Mining and Milling Co.	Crazy Horse Cr.	.75	5	3	1	5	500	†	1898
1,444	3	Tillard Canal Co.	Big Horn River	8	13	10	1.5	2	3,000	2,024	"
1,445	1	Edward Cheesbrough	Murray's Cr.	1.5	1.5	1	.8	200	15	130	1897
1,446	1	" "	Tributary of Fish Cr.	.75	3	2	1	2.16	50	175	1898
1,447	1	" "	" " "	.25	2.5	2	1	2.16	15	80	"
1,448	1	" "	" " "	.25	2.5	2	1	2.16	15	70	"
1,449	1	Fred Herman	Medicine Bow River	.5	1.33	1.16	1.25	20	75	6	1896
1,450	1	Edwin Meredith	Branch Medicine Bow	.5	2	2	1		50	20	
1,451	1	" "	" " "	1.25	3	2	1		75	140	
1,452	1	Clark C. Green	Clark's Springs	.25	3.5	3	1	5	50	7	1897
1,453	1	" "	Red Canon Cr.	1.66	4	3	1	5	200	23.5	1898
1,454	3	John J. Smith	Buffalo Flat Cr.	.25	2	2	1	20	25	18	"
1,455	1	Jorgen Jensen	Mary E. Creek	.5	4	2	1	8	250	38.4	"
1,456	2	Frank Davis, et al	Little Beaver Cr.	1.5	14	10	2	7	700		1899
1,457	1	M. S. Hampton	Rock Cr.							80	1897
1,458	1	Overland Gold Mining Co	Wagon Hound Cr.	3					1,000	960	1898
1,459	1	Chas. S. Crysler	Rock Cr. and Overland Gulch	3	10	6	2	10.5	5,000	3,680	"
1,460	3	H. D. and F. O. Thompson	Clark's Fork	3.5	9	5	2	4.5	1,500	1,000	1899

* Not approved. † Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,461	1	Jonathan Veitch	Morey Ditch	2.5	3	2.5	.58	5	$ 350	46	1897
1,462	2	R. M. Hays	Branch Little Goose Cr.	1.5	3	2	.5		50	30	"
1,463	2	" "	Hanna Cr.	.5	3	2	.75	5 to 20	25	15	1898
1,464	1	A. A. O. Rutherford	Spring Cr.	.5	4	3	1	7.	200	24	1897
1,465	1	" "	" "	.25	4	3	1	7	100	11	"
1,466	4	S. E. Locks and T. J. Rittenhouse	Green River	32.5	16	10	5	10	120,000	14,350	1900
1,467	4	" " " "	" "	20	16	10	5	1	100,000	5,845	"
1,468	1	Margaret Dixon	Rock Cr.	1.75	7	6	2	13	1,000	240	1897
1,469	1	V. Gonsalves	East Muddy Cr.	1	11	4	3.5	4	200	75	1898
1,470	4	Naomi S. Wheelock	Smith's Fork	2	6	3			200	80	1897
1,471	1	Donald Beaten	Sweetwater River	1.97	6	3	1.5	2.64	265	109	1899
1,472	1	C. R. Countryman	" "	4.7	10	4	2	3.17	850	848	"
1,473	1	Thomas Phillips	Laramie River	1	5	3	2	5	800	115	1897
1,474	3	Otto Hanson	Bates Cr.	1.25	4	4	1	10.7	150	74	"
1,475	3	Geo. C. Grout	Ten Sleep Cr.	1.25	4.5	3.5	1	10	200	221.2	1898
1,476	2	J. M. Enochs	Dutch Cr.	1.25	5	3	1	8 to 10	100	70	"
1,477	2	A. N. Keith	Beaver Cr.	1.5	6	4	1	5.28	500	109.8	"
1,478	4	Roy McBride	Little Gros Ventre Cr.	.5	6	4	1	1.056	80	140	1899
1,479	1	Louis Miller and A. L. Stone	Big Laramie River	1.5	24	18	3	2.5	5,400	*	1900
1,480	2	J. H. Gillespie	Sheridan City Reservoir Gulch	.5	3.5	2	1	10.56	90	15	1898
1,481	4	John Rahm, et al	West Fork of New Fork	1.5	5	4	1	5.6	125	208	1899

* Mining and power.

Permits to Appropriate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width Top	Width Bot'm	Depth	Grade, Feet per Mile			
1,482	4	John Rahm, et al.	West Fork of New Fork	.5	4	3	1.5	6	$ 75	180	1898
1,483	1	John Thompson	Willow Cr.	.8	2	1.5	1	6	150	14	"
1,484	1	Wm. E. Clayton	Dry Cr.	1	4	3	1	6	175	85	"
1,485	1	" "	" "	.25	4	3	1	6	25	15	"
1,486	2	Scott K. Snively, et al.	East Fork Big Goose Cr.	2	6	4	1	12	1,000	1,050	"
1,487	4	H. K. Hoff, et al.	West Fork of New Fork	3.25	9	7	1.5	15	500	725.1	1899
1,488	4	Wm. Longdon	Bear River	.75	5	4	2	5	75	40	1898
1,489	4	Joseph Race	Smith's Fork	.25	3.5	3.5		20	60	60	1897
1,490	4	" "	" "	.04	3	3	.66	20	20	15	"
1,491	1	Thomas L. Darst	Dry Laramie Cr.	.75	5	3	1	5	50	55	1898
1,492	4	Ezra Brown	Brown Cr.	.375	2	1.5	.8	10	20	40	"
1,493	1	Chas. S. Crysler	Rock Cr. and Overland Gulch	3.4	10	6	2	10.5	10,000	11,000	"
1,494	1	Medicine Bow Mining Co.	Wagon Hound Cr.	5	6	4	2	5	2,166	*	1901
1,495	3	B. J. Neiber	Gooseberry Cr.	1.04	9	3	3	5.28	160	88.37	1898
1,496	1	I. N. Bard	South Little Bear Cr	.75	2	1	1	10	50	41	"
1,497	1	Levi Ashenfelter	" " " "	.75	2	1	1	8	50	26	"
1,498	1	Lena Paulsen	Paulsen Branch Little Bear Cr.	.75	2.5	1.5	.8	8	50	40	"
1,499	4	Wm. Smith	Springs	.5	2	1.5	1	4	25	120	"
1,500	1	M. D. Carothers	Wagon Hound Cr.	.5	5	3	1	5.28	200	29	"
1,501	1	" "	Sheep Cr.	.5	4	2.5	.75	5.28	100	8	1899

* Milling.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,502	4	Nannie R. Stoner	Pine Cr.	1	4	3	1	20	$ 500	320	1898
1,503	4	Zebulon P. Dickey, et al	Bear River	8.4	8	6	2	8	2,550	1,280	1900
1,504	2	James Stubbs	Blue Cr.	.5	4	2	1	50	250	66	1898
1,505	1	H. H. Foxton	Mill Cr.	.75	6	4	1	7.84	200	17	"
1,506	4	R. A. Miller	Camp Cr.	1	3	2	1.5	10	200	50	"
1,507	4	Chas. Johnson	Anderson Cr.	.25	3	2	1.5	20	10	35	"
1,508	4	Hyram Smith	La Barge Cr.	1.37	5	4.5	1	6.4	300	187	"
1,509	4	Reardon & Fear	South Piney Cr.	2.5	7	6	1.5	5.28	400	503	1899
1,510	1	Robert L. Deal	Spring and Separation Cr.	1	4	2	1.5	20	400	160	1898
1,511	1	G. G. Ervay	Sweetwater River	1.75	3	2	1	6	600	75	"
1,512	2	J. F. Bock	Horse Canon	2	2	1	1	10	600	90	1899
1,513	2	" "	Freshwater Spring	1	2	1	1	15	200	19	1898
1,514	4	Wm. K. and Sarah Roy	North Beaver Cr.	.75	5	4	1.5	50	300	516	"
1,515	3	W. F. Cody	Irma Lake						1,000	5	"
1,516	4	Wm. N. and E. Apperson	Horse Cr.	2.25	8	7	1.5	7.6	500	632	1899
1,517	4	Jas. Lanigan	Little Gros Ventre River.	2.65	6	4	1	12	100	160	"
1,518	4	Mrs. Nancy Alexander	West Fork of New Fork	2.5	6	5	1.5	44	500	310	1898
1,519	4	Eugene Alexander	" " " "	3	5	4	1	88	200	94	"
1,520	1	Jonathan Veitch	Spring Cr.	1.75	3	2.5	.58	5	200	46	1897
1,521	4	C. T. Davis and J. P. McCarter	North Beaver Cr.	1.75	9	8.5	.5	40.04		184	1898
1,522	2	T. J. Woodley	Gay Cr.	.75	3	2	1	10	250	65	"
1,523	1	John Storrie	Hat Cr.	1	4	2	1	5.28	100	75	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,524	1	John Storrie	Hat Cr.	.5	4	2	1	5.28	$ 50	25	1898
1,525	2	Zedrick W. Freel	Springs, Oil Cr.	.75	4	3	1	7	500	105	"
1,526	1	J. S. Bonsell	Old Woman Cr.	.5	2	1	.66	4	100	30	1899
1,527	2	David J. Jones	Oil Cr.	.75	4	2	2.5	5	600	160	1897
1,528	1	James Payton	Little Deer Cr.	1.5	7	3	4.5	2	450	140	1899
1,529	4	Thomas Sprague	Sprague Cr.	1	3	3	1	20	75	80	1898
1,530	4	Chas. F. and Nellie Ball	Marsh Cr.	.5	6	5	1	16	175	345	1899
1,531	4	Chas. F. Ball	" "	2.75	8	6	1	10	500	118	"
1,532	1	Frank O. Harrison	Rock Cr.	.11	4.6		1.6	11	150	240	1897
1,533	1	John Thompson	Willow Cr.	1.39	2	1.5	1	8	150	60	"
1,534	1	Nels Hansen	Medicine Bow River	4.75	4	3	1	17	600	350	1898
1,535	1	Wm. Gunther	Duck Cr.	.25	3	2	.5	6	100	10	1899
1,536	1	Henry Gunther	" "	.25	3	2	.5	6	100	10	"
1,537	1	John Gunther	" "	.12	3	2	.5	6	100	6	"
1,538	1	F. A. Michael, et al.	Snake River	5	8	7	1	6.28	2,000	1,320	"
1,539	4	J. P. Simpson	Cache Cr.	1	15	6	2	15	200	140	"
1,540	1	Henry L. Reed	Runningwater								
1,541	1	Cordelia J. Barcus	French Cr.	1.5	3	2	2	6	800	160	1898
1,542	2	T. A. Stout and C. B. Stroud	Murphy Gulch	1.5	5	3	1	7.5	150	70	"
1,543	2	E. C. Woodley	Gay Cr.	.75	3	2	1	10	200	55	"
1,544	4	Wilfred Nichols	North Piney Cr.	1.75	6	5	1	6.4	325	160	1899
1,545	4	J. A. McGraw	Bear River	.13	8	7	1	7.5	250	440	1898

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
1,546	4	L. Lucas	Cherry Spring	2	1.5	1	1	20	$ 30	*	1898
1,547	3	Chas. H. Watson	Wood River	2.25	7.5	5.5	1	7	400	396	1899
1,548	4	T. G. Pierce	Willow Cr.	1.25	6	5	1	6	200	195	1898
1,549	2	Geo. M. Russell	White Tail Cr.	.75	3	2	1.5	14	200	60	"
1,550	1	Wm. H. Stein	Bear Cr.	1.1	3.5	2.5	1.5	10.56	400	†	"
1,551	1	Archibald Veitch	North Platte River		10	6	2	1.76	1,000	166	1899
1,552	3	A. J. Erickson	Grey Bull River	2.5	8	6	1	6 to 8	400	533	"
1,553	1	J. A. W. Hudson	Fish Cr.	1.5	7	4	1.5	5	400	125	1898
1,554	1	Lewis J. Bush	Sand Cr.	.62	3.5	3.5	4	5	200	150	"
1,555	3	A. B. Chapman	Paint Cr.	4	7	6	1.5	9	2,500	686.52	1900
1,556	1	Mrs. J. B. Taylor	Long "	2.25	5	3	1.5	13.5	400	54	1899
1,557	4	Edward Hunter	Gros Ventre River	1.25	7	6	1	10.56	250	130	1900
1,558	1	Elijah Moore	Moore Cr.	1	3.5	3	1.2	5.28	250	90	1898
1,559	1	" "	" "	1	4	3	1	5.28	500	150	1899
1,560	3	David Williams, et al.	Clark's Fork River	7	8	5	3	8	5,000	1,000	1900
1,561	2	John Pearson	South Fork of Hay Cr.	1.5	3	2	1	15	125	80	1898
1,562	2	" "	Spring	.62	1	.66	.5	20	50	20	"
1,563	1	Mason Rigby	Crook's Cr.	.62	3	2.5	1	6.66	125	55	"
1,564	1	" "	" "	.5	3	2.5	1	6.66	100	70	"
1,565	1	" "	" "	.37	10	6	2	10	40	125	1899
1,566	4	William and E. W. Sutton	Green River	2	8	7	1.25	4	1,000	630	"
1,567	1	J. B. Kohleffel and Geo. Cogdill	Snake River	2	4	3	1	5	400	160	"

* Stock. † Mining.

Permits to Appropriate Water—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,568	2	L. R. A. Condit et al	Beaver Cr	3.25	7	5	1.5	12	$ 1,000	355	1899
1,569	3	Charles Ackles	Kirby Cr	.84	3	2	1	15	200	43	1898
1,570	3	Emil Rehnberg	" "	.55	3	2	1	20	175	20.9	"
1,571	1	Andrew Salmon	Sweetwater River	1.12	8	6	1	3.16	1,000	100	1899
1,572	3	W. W. Peay and E. R. Converse	No Wood River	1.26	6	5	1	2.64	700	237	"
1,573	3	S. A. Lampman	Horse Cr	1	5	4	1	7	250	80	1898
1,574	1	W. J. Hegel et al	Fox Cr	1.5	5	2	1.5	10.56	750	93	"
1,575	4	T. S. Johnson et al	Bear River	1	2	1.5	1	5	150	90	"
1,576	3	Charles C. Peck	Meadow Cr	.22	3	2	1	12	75	69.9	"
1,577	4	Joseph Strong	Cottonwood Cr	.83	4	3	1	8	75	150	"
1,578	1	John Biddick	Big Laramie River	3.09	5	3	1.5	2	400	140	"
1,579	4	Ebenezer Swainston	Crater Cr	1	3	2	1	5	100	320	"
1,580	2	W. Moncreiffe	Spring, Little Goose Cr	.25	3	1	1	15	200	15	1899
1,581	4	Mary R. McCann	Ham's Fork Cr	2	7	5	2	6.5	300	180	"
1,582	4	Ephraim Stock et al	Beaver Cr	3	12	8	2	5.28	500	890	"
1,583	4	Alexander Hill	Spring Cr	1	3	2	1	50	50	80	1898
1,584	4	Amos W. Smith	North Piney Cr	4	8	7	1.5	5.28	7,200	320	1899
1,585	2	James and John Birchby	Tongue River	1	4	3.5	2	4	700	120	1898
1,586	3	Wm. F. Cody and Nate Salsbury	Shoshone River	120	24	15	9	5	1,000,000	120000	1902
1,587	1	G. C. Morrison	Reid Cr	.5	3.5		.9	10	50	10	1897
1,588	1	" "	" "	.5			.9	10	50	10	"
1,589	4	James Overy	Smith's Fork	.5	3	3	1	6	15	35	1898

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,590	4	James Overy	Smith's Fork	.75	4	3	1	6	$ 10	110	1898
1,591	1	D. H. Cole	La Bonte Cr.	.65	3.5	2	1	2.5	200	25	1897
1,592	2	S. D. Ditto	Donkey Cr.	1.25	6	4	1.5	6.25	500	120	1899
1,593	2	Alonzo B. Taylor et al	Middle Fork Crazy Woman Cr	1.5	4	3	1	5.25	500	85.8	"
1,594	2	" " " "	" " "	1.75	4	3	1	5.25	675	213.2	"
1,595	1	Jane Clark	Hobart Cr.	1.25	3	2	1	6 to 7	75	94	"
1,596	1	William Clark	McKinley Cr.	.75	3	2	1	7	60	111	"
1,597	4	E. Wagenfuche	Boulder Cr.	2	4	4	1.5	8	500	312	"
1,598	4	A. S. Marshall	Big Twin Cr.	.5	5	4	1.5	5.28	125	140	1898
1,599	4	" "	Little Twin Cr.	.75	5	4	1.5	10.7	100	188	1899
1,600	4	P. J. Quealy & M. S. Kemmerer.	Ham's Fork Cr.	1				*	15,000	†	1900
1,601	4	" " " " "	" " "	.5				*	8,000	190	"
1,602	1	Stephen Wolf	Branch Medicine Bow	.11	2.5	2	.83	26	15	10	1897
1,603	1	Charles E. Shippen	Muddy Cr.	1	4	3	1	5	250	32	1899
1,604	1	" " "	Little Muddy Cr.	1	4	3	1	5	200	25	"
1,605	1	Richard Brackenbury	Medicine Bow	.75	2.5	2	.83	5	150	25	1898
1,606	2	E. A. Whitney	Cross Cr.								"
1,607	4	Mrs. Mattie Lyndon et al	Slough Bear River	.4	3	2	1	10	100	7.5	1899
1,608	1	Thomas Black	Willow Cr.	1.5	2	1.5	2	4	300	8	1898
1,609	2	George H. and Mary Cutter	Tributary Wolf Cr	.8	1.5	1	1	25	150	28.44	"
1,610	1	Charles Rice	Dogie Cr.	2	4	3	1	10	250	25	1899

† Pipe Line. † Municipal.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,611	2	George B. McCalmont	West Teapot Cr.	.5	3	1.5	1	7	$ 50	10	1898
1,612	2	" " "	" " "	.5	4	1.5	1.5	7	50	11	"
1,613	3	Charles W. Anderson	Kirby Cr.	.6	6	5	1	2.64	350	198.5	"
1,614	3	" " "	" "	1.32	4	3	1	2.64	450	115.2	"
1,615	1	Mary Stanton	Crow Cr.	4	7	4	1.5	4	1,000	515	*
1,616	1	Joseph E. Johnson	Rock Cr	3.75	6	4	1	2	1,550	160	1898
1,617	3	Gertie M. Dew, Susie and E. Duffield	Crooked Cr.	5	8	6	1	7	650	419	1899
1,618	1	William Storey	Spring Cr.	.28	2	2	1	30	250	200	1897
1,619	1	" "	Camp Cr.	.29	2	2	1	80			"
1,620	1	" "	Tributaries Savery Cr.	8	8	4	2	7	6,000	1,000	1901
1,621	1	Jonathan Veitch	West Fork Medicine Bow River	4	5	4	1	4	500	522	1899
1,622	4	J. H. Gilligan and P. Iven	East Fork of New Fork	6	3.5	3	2	60	1,900	550	1898
1,623	4	P. A. Westfall	Spring Cr.	1	3	1.5	1	60	150	130	"
1,624	1	A. C. Morrison	Reid Cr.	.29	3.5		.9	10	50	10	1897
1,625	4	Moroni N. Hill et al	Green River	5.5	10	8	2	11	1,500	747	1900
1,626	4	Charles P. Budd	North Piney Cr.	1.5	6	5	1	11.5	250	325	1899
1,627	1	Charles R. Macy & Co.	Box Elder Gulch	.13	3	2	.8	10	25		1898
1,628	1	William McGifford	Little Deer Cr.	.75	5	3	1	8	100	48	1899
1,629	1	" "	" " "	.62	5	3	1	8	100	30	"
1,630	3	W. H. Edick	Bull Cr.	.25	2.5	2	.5	8	30	10	1898

* Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
1,631	1	Douglas Con. Placer Mining Co.	Muddy Cr.	1.12	9	5	2.5	10	$ 2,000	560	1898
1,632	1	" " " " "	Spring Cr.	.56	9	5	2.5	10	1,000	560	"
1,633	4	Charles C. Burkhalter et al.	Fontenelle Cr	3.56	8	7	1.5	5.28	600	316	1900
1,634	3	Thomas Wroth	Lysite Cr	1	4	3	1	8	150	122	1899
1,635	3	Martin L. Jones	South Fork Shoshone R.	1.25	2.5	2	.5	8	150	30	1900
1,636	1	Harrison Dell	Spring Canon Cr.	.25	4	2.5	1	8	150	10	1899
1,637	4	T. E. and Norah B. Andrus	Horse Cr.	4	8	7	1.5	48.5	1,000	640	"
1,638	1	S. Mortimore	Little Deer Cr.	.75	5	3	1	8	150	26	"
1,639	1	" "	" " "	.62	5	3	1	8	100	22	"
1,640	4	James C. Lowe	Middle Piney Cr.	1.25	6	5	1	12	200	225	"
1,641	1	Norah H. Hudson	Fish Cr.	.5	6	4	1	15	50	15	"
1,642	1	" " "	" "	.33	6	4	1	15	40	15	"
1,643	1	" " "	South Branch Fish Cr.	1	6	4	1	15	60	15	"
1,644	1	A. L. Miller	Old Woman Cr.	.75	4	2	1.5	8	400	30	1898
1,645	1	Henry A. Johnson	Middle Fork Casper Cr.	2.5	5	3	1.5	6	800	96	1897
1,646	1	A. R. Curtis	Curtis Cr	.5	4	2.5	1	10	150	22	1898
1,647	1	" "	" "	.5	4	2.5	1	10	200	16	"
1,648	2	Charles Stubbs	Sheep Cr.	.75	4	2	1	10.56	250	66	"
1,649	2	Charles Buck	North Fork Powder River	.82	15	3	6.58	5	250	45	"
1,650	2	" "	" " " "	.5	6	4	1	5.28	300	37.7	"
1,651	1	William Richardson	Medicine Bow River	1.25	2.5	2	5	9	75	28	1899
1,652	1	John Foxton	Mill Cr	.75	5	4	1	10	150	31	1898

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,653	4	W. A. Thompson et al	Spread Cr.	4.5	16	14	1.5	20	$ 1,000	1,880	1901
1,654	1	August Mattson	Deer Cr.	1	4	3	1.5	3.33	100	165	1898
1,655	1	William Bangs	Savery Cr.	1.1	5	3	1	13.33	700	172	"
1,656	3	Wyo. Gold Mining Co.	Warm Spring Cr	4	9	9	3	10	6,000	2,000	1900
1,657	3	" " " "	" " "	.52	6	4			2,000	2,000	"
1,658	4	Charles E. Burke	Ham's Fork Cr.	1.25	6	5	1.5	2.5	200	290	1899
1,659	2	William and Maggie Symons	Dutch Cr.	2.25	6	4	1	4	300	135	"
1,660	2	M. A. Hamilton	Cameron Gulch	1.25	5	3	1	10.5	300	80	"
1,661	3	Patrick Kelly	White Creek	1.5	5	3	1	10 to 25	400	216	"
1,662	4	Peter Danks	Slough Bear River	.5	3.5	2.75	1	5.28	100	19	1900
1,663	4	William J. Hughes	Cedar Cr.	1	3	2	1	8	50	320	1899
1,664	2	George A. Comstock	Red Fork Powder River	1	6	4	1	5.28	1,000	42.8	"
1,665	1	Henry A. Johnson	Middle Fork Casper Cr.	.5	5	3	1.5	6	100	22	"
1,666	2	M. J. Coyle	Little Oil Cr.	1.5	2	1.5	1.5	8	500	240	"
1,667	2	C. A. Danielson	" " "	1.53	4	4	1	5	500	160	"
1,668	4	Mrs. Martha Halston	Ham's Fork	1.5	6	6	2	4	40	160	"
1,669	4	John Cheny	Gros Ventre River	2.5	7	5	1	10.56	250	160	"
1,670	4	James Perry	Branch Smith's Fork	.25	3	2	1	10	75	25	"
1,671	4	" "	" " "	.5	3	2	1.5	10	100	35	"
1,672	4	" "	" " "	.75	3	3	1	10	125	30	"
1,673	4	" "	" " "	.5	3	2	1	15	100	23	"
1,674	4	Diamond Coal and Coke Co.	Ham's Fork River	1	3	1	1	10	500	80	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'n					
1,675	1	Fremont Hot Springs Co	Springs Secs. 24 & 25, T. 30, R. 83	.35						30	1899
1,676	1	W. B. Wood	Box Elder Cr	.75	5		1	1.2	$ 200	20	1897
1,677	1	" " "	" " "	.5	4		1	3	150	23	1898
1,678	1	David Kidd	Lone Bear	1.25	3.5	2.5	1	7	60	55	1899
1,679	1	David Kidd	Broken Horn Cr	1	3.5	2.5	.83	7	50	44	"
1,681	4	Julia L. White	Deadhead Cr	1	4	2.5	1.5	8	100	60	*
1,682	4	Wm. Huselton	Crystal Cr	2.75	10	8	2.5	15	1,000		1899
1,683	4	Chas. E. Stevens and John H. Morrison	Green River	3	6	6	3	1.56	1,000	625	1900
1,684	1	C. H. McWhinnie	La Bonte Cr	5	11	7	2	2.5	4,000	500	1899
1,685	1	A. H. Brownlee	Willow Cr	2.75	5	4	1	3.5	500	145	1900
1,686	4	Wm. Smith, et al	Black's Fork River	4.55	8	6	1.5	6	300	380	1899
1,687	4	East Fork Land and Cattle Co	East Fork of New Fork	3	8	6	2	180.	1,200	1,377	1900
1,688	1	Goose Egg Springs Ditch Co	Goose Egg Springs	3	12	10	2	4	3,500	557	1899
1,689	1	Joseph Heward	East Fork Medicine Bow	6	8	7	1	5.28	2,000	965	1900
1,690	3	Joseph S. Brown	Crooked Cr	2.25	3.5	3	1.5	13	350	250	1899
1,691	4	Elizabeth Anderton	Slough, Black's Fork River	.12	3.5	2.5	1	8	100	140	"
1,692	1	Amzi W. Boles	Wagon Hound Cr	1.5	5	3	1	5	400	113	"
1,693	3	Geo. W. Woolf	Bad Water Cr	1.25	6	6	1	7	200	166	"
1,694	4	James Smith, et al	Wilkinson Cr	7.5	8	4	2	6.5	1,500	294	1900
1,695	3	Frank O. Reed, et al	Bad Water Cr	1.5	6	5	1	7	300	100	1898

*Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,696	4	Chas. Lee	Pine Cr.	.37	4	3	1.5	6.66	$ 80	70	1899
1,697	4	Thomas Anson	Branch Smith's Fork	1.5	4	2	1	10 to 20	150	110	"
1,698	3	H. Alice Richards	Red Bank Cr.	1.5	3	2	1	8	200	205	"
1,699	2	A. Erdmann	Indian Cr.	.11	5	4	.83	7	200	80	"
1,700	1	Iver Olson and John Wyck	Wagon Hound Cr.	1.75	3.5	3	1	4	250	155	1898
1,701	1	" " " "	" " "	1	2	1.5	1	4	50	40	"
1,702	2	Wm. B. Brock	Red Fork of Powder River	.5	3	2	1	9	100	26.5	1899
1,703	1	A. R. Cowly	Sweetwater River	1.14	6	3	1.2	2.5	200	88	"
1,704	1	" "	Muddy Cr.	.75	3	1	1	26.66	100	125	1898
1,705	1	Louis Sederlin	Fish Cr.	1.25	3	2.5	1	4	100	112	"
1,706	3	Eureka Mining Co.	Deep Cr.	.75	6	3	1.5	10	500	180	1899
1,707	4	Josiah A. Lovatt	New Fork River	.56	11	9	1	4	200	320	"
1,708	4	George A. Lovatt	Silver Cr	1.01	6	4	1	20	100	160	1898
1,709	1	J. H. Mullison	North Brush Cr.	1.32	12	8	2	10	1,500	320	"
1,710	1	" "	" " "	.37	3	3	1	12	250	320	"
1,711	1	T. B. Hicks	Horse Cr.	5	18	12	3	4.2		15000	1899
1,712	2	M. J. Jeffries	Springs trib. to Little Goose	.75	4	2	1	15		20	1898
1,713	2	" "	" " " " "	1.25	3	1	1	30		15	"
1,714	3	J. G. C. Volmer	Seepage Farmers' Canal	1.25	6	4	1		100	160	1899
1,715	3	J. A. Jacobson	Stinking Water River	1.75	8	6	1	6	300	251	"
1,716	3	Colin F. Mackenzie et al	Trapper Cr.	3.5	7	5	1	5.28	600	191	"
1,717	3	William Benedict	Bull Cr.	1	4	3	1	10	100	64	1900

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,718	3	Ora Snyder	Crawford Cr.	1.25	2	2	1	30	$ 150	62	1899
1,719	1	Robert Fisher	Spring Cr.	.5	3	2.5	1	30	50	75	"
1,720	2	C. C. Baldwin	" "	.14	2	1	1		100	5	"
1,721	4	Phillip Mass	Dry Cr.	3.75	5	3	3	100	500	200	1898
1,722	2	Demmon Bros	Young's Cr	2.25	5	3	1		250	125	1899
1,723	1	J. I. Cowan	Billy Cr.	1	4	4	2	11.56			1900
1,724	1	Wyo. Development Co	Laramie River						60,000	63,560	1902
1,725	4	Alice J. Lehmer	Beaver Cr.	.6	4	2.5	2.5	50	250	166	1899
1,726	4	" "	" "	.16	3	2	1.5	46	75	14	"
1,727	1	James I. Cowan et al.	Grand Encampment River	1	6	3	4	11.56			1900
1,728	3	Jacob Hitshew	Bad Water Cr.	.75	4.5	4	1	10	200	35	1899
1,729	3	" "	Spring	.5	3	2	1	10	50	100	"
1,730	4	A. O. Neilson	Beaver Cr.	5.25	6	5	2	10	600	91	1900
1,731	1	William C. Kimball	Box Elder Cr.	4.5	9	6	1.5	1.28	3,000	1,099	"
1,732	3	Grant Brown	Crooked Cr.	3.75	3	2.5	1.5	12	350	150	1899
1,733	4	William I. Todd	Green River	2.5	8	7	1	4	500	344	1900
1,734	3	Bunce and Detfelder	Conant Cr.	.5	3	2	1	7	80	75	1898
1,735	3	" " "	" "	.5	3	2	1	7	60	32	"
1,736	4	J. B. and Emma Coffman	Bear River	1	5	3	1	16	200	180	"
1,737	2	Charles Zummach	Middle Fork of Hay Cr.	1	3	2.5	2	6.66	500	160	1900
1,738	4	J. Wardell and J. N. Hill	Green River and New Fork	1.75	12	10	1	4	500	231	1901
1,739	3	A. C. Newton	Trail Cr.	.8	6	4	2	5	250	320	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,740	1	A. E. Hasler	Springs	1	3	2	.8	7.5	$ 160	160	1898
1,741	1	I. C. Miller et al	Sweetwater River	7.61	18	10	4	2.5	12,000	3520	1899
1,742	1	De F. Richards	North Platte River	2.5	11	8	2.5	1	3,000	281	1900
1,743	1	Edward Smith et al	Box Elder, Camp and White Cr.	2.6	6	4	1	6	300	186	1899
1,744	1	Charles Smith	Windy Ridge Cr	.6	5	3	1	8	50	115	"
1,745	1	L. P. Johnson	Swede Cr	.9	4	2	1	10	50	30	"
1,746	1	Edward Smith et al	Box Elder and Swede Cr		6	4	1	8	300	125	"
1,747	1	" " "	Box Elder Cr	2.25	6	4	1	10	250	132	"
1,748	1	Lany E. Smith	Camp Cr	.8	5	3	1	8	75	72	"
1,749	1	" " "	" "	.2	5	3	1	8	40	105	"
1,750	1	Lillian Bowie	Bates Cr	1.25	4	3	1	8	70	67	"
1,751	1	" "	" "	1.5	4	3	1	8	80	45	"
1,752	1	John Housiaux	La Prele Cr	3.75	12	8	2	2.64	2,500	712	"
1,753	1	" "	" " "	1.25	7	5	1	5.28	500	114	"
1,754	2	E. J. Owen	Bonanza Cr	.87	5	3	1	12–151	250	140	"
1,755	2	" "	" "	1.25	5	3	1	12	250	65	"
1,756	1	Bernard Hynes	Snake River	1.5	7	5	2	4	500	130	"
1,757	1	S. and C. Woods	North Laramie River	.75	8	6	1	3	300	180	1900
1,758	1	William Harten	Batts Cr	.5	5	3	1	5.28	75	14	1899
1,759	1	" "	" "	1	3	3	1	8	100	57	"
1,760	2	F. A. Jones	Billy Cr	1.75	5	3	1	10.56	500	144.7	"

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,761	2	E. F. King	Sour Dough Cr.	.5	3	2	1.5	19	50	10	1899
1,762	1	Clark Wellman	Spring Cr.	.75	6	5	1	6	40	19	“
1,763	1	A. M. Gildersleeve	Big Cr.	2.5	24	20	3	10.5	11,500	640	1900
1,764	1	“ “	Bear Cr.	1	12	9	2	5.25	700	640	“
1,765	2	Frank W. Holler	Poker Cr.	1.62	4	3	1	8.33	500	140	“
1,766	2	Elizabeth Mumper	Jennings Cr.	.75	2	1	.75	10.56	10	22	1899
1,767	1	S. S. Sherman	Rawhide Cr.	.75	5	4	1	5	200	50	“
1,768	1	J. W. Price	Wolf Cr	1.12	3	2.5	.66	10	100	75	“
1,769	1	G. W. Griffin	Rankin Cr	2.5	6	5	1.25	4	300	110	1898
1,770	4	E. McLatchee	Dry Cr.	.62	2	1.5	1	10	25	60	1899
1,771	3	Landis & Beck	North Fork of Big Horn R.	4.5	5	4	1	10	500	579	“
1,772	1	Mrs. Annie McLean	Corral Cr	1.25	6	4	1.5	5	200	20	“
1,773	1	“ “ “	Pitch Pine Cr.	1.25	6	4	2	5	225	163	“
1,774	2	O. Oberreich and A. H. Roush	Little Young's Cr.	1.5	5	3	1	10	150	130	“
1,775	1	William Degenhardt	Rawhide Cr.	.75	4	3	1.5	4	250	50	“
1,776	1	J. G. Carlson	Box Elder Cr.	.5	5	3	1	8	50	14	“
1,777	1	“ “	“ “ “	.5	5	3	1	8	50	34	“
1,778	2	Terrence Smith	North Fork of Powder R.	1.5	8	4	1.5	5.28	600	159	1898
1,779	2	William E. Clifton	Young Woman's Cr	.5	4	3	1	5	75	25	*
1,888	1	Hanna Mahoney	Muddy Cr.	1.5	3	2	2	14	400	140	1899
1,889	1	“ “	“ “	1.5	4	2.5	2	14	600	180	“
1,782	3	W. H. Edick	South Fork Shoshone R.	2.5	3	2.5	1	5	200	100	*

*Not approved.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,783	4	Frank D. Ball et al.	Cottonwood Cr.	4	6	5	1.5	11.5	$ 600	428	1900
1,785	1	Francis G. McCrossin	Little Box Elder Cr.	1.75	6	4	1	5.28	150		1899
1,786	1	Rebecca Kose	Lower Lost Springs	.5	4	3	.5	4	200	45	"
1,787	1	John B. Russell	Wagon Hound	.75	4	3	1	4	150	20	1898
1,788	1	Joseph Callais	Mill Cr	.5	1	1	.6	15		55	"
1,789	4	John G. Fisk et al	Gros Ventre River	5.5	15	8	3.6	5.28	1,000	1,600	1899
1,790	2	A. H. Roush	Little Young's Cr.	2.5	6	4	1	10	275	175	"
1,791	3	J. W. McCormick and R. Sharp	Stinking Water River	2.25	6	3	1.5	15	500	300	1900
1,792	3	D. H. McFall	Cottonwood Cr.	2	5	3	1	10	300	100	"
1,793	4	Margaret R. Fish	North Piney Cr.	1.5	7	5	1.5	15	800	370	1899
1,794	4	Cyrus F. Fish	" " "	.75	5	4	1	8	300	116	"
1,795	1	D. N. and M. E. Stickney	Little Laramie	1.25	5	4	1.5	7	100	160	1898
1,796	1	Paul Pascoe	" "	2	4	3.5	1	7	100	160	1899
1,797	1	Tolland Company	Big Laramie	2.2	10	6	2	2	600	330	"
1,798	2	Lewis Hulett	Blacktail Cr.	3	10	9	1	6	1,000	200	1900
1,799	1	U. S. Grant	Snow Shoe Cr.	.5		2.5	.66	48	40	9	1898
1,800	1	M. I. Conwell	Little Box Elder Cr.	.25		4	1	5	50	15	
1,801	1	A. H. Brown	Box Elder Cr.	.5	4		1	4	50	21	
1,802	1	J. M. Abney	Cottonwood Cr.	.75	4		1	4	50	20	
1,803	1	W. H. Thayer	Hunton Cr.	.25	5	3	1	8	50	14	1900
1,804	1	" "	" "	.37	5	3	1	8	50	*	"
1,805	2	W. S. Taylor et al.	Red Fork of Powder River	6.5	9	7	1	5.28	1,000	743.1	"

* Reservoir.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,806	2	Mrs. Nick Scullens	J. A. Cr	.5	2	1	1	20	$ 60	106	1899
1,807	3	H. W. Pense	Beaver Cr	.75	5	3	1	20	75	120	"
1,808	1	Paul Pascoe	Little Laramie	1.5	4	3.5	1	5	100	160	"
1,809	1	L. Fillmore	" "	.5	6	4	2	4		940	"
1,810	3	Martha F. McCune	Springs	1.25	5	3	1	5	75	50	"
1,811	4	S. N. Leek et al.	Little Gros Ventre	3	8	6	2	8	400	700	1900
1,812	4	John Gourley, Sr.	Smith's Fork Cr	.13	6	5	1	10	40	60	1899
1,813	4	" " "	" " "	.12	4	3	1	10	40	80	"
1,814	1	T. A. Shaw	Windy Cr	1.5	6	4	1	10	300	80	1898
1,815	4	R. M. Forncrook and Chas. R. Rathbun	Fontenelle Cr	4	6	4	1	5.28	500	161	1899
1,816	4	R. M. Forncrook	" "	.25	3	2	2	15	50	22	"
1,817	4	D. B. McCoy et al.	Pine Cr	2	10	7	1.5	8	1,200	903	1901
1,818	1	Elmer Graham	Long Cr	1	4	3	1	6.5	200	49	1899
1,819	4	J. P. Nelson	North Piney Cr	2	5	4	1	5.28	300	237	1900
1,820	1	John Wright	Elk Cr	1.5	5	3	2	5	500	220	1899
1,821	2	William Taber	North Fork Sour Dough Cr	1	6	3	2.5	5.25	300	85	"
1,822	4	James Millsap	North Piney Cr	.75	4	3	1	10	200	110	1900
1,823	3	Bert B. Morton	No Wood River	4.01	10	8	1	5	1,500	340	1901
1,824	3	Charles Bremmer	Little Canon Cr	1.75	5	3.75	1	10	500	89	1900
1,825	1	Conrad Bardill	Cottonwood Cr	.5	2		1		100	25	
1,826	1	Miller Brothers	" "	1		4	1	5	150	70	

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,827	1	H. W. Pollock	Spring								1898
1,828	1	G. H. Spracklen	La Prele Cr.	3	5	4	1	5	$ 600	73	1900
1,829	3	John W. Deane	Wood River	2	4.5	4	3.5	3.5	200	240	1899
1,830	3	M. A. Alexander	No Wood River	2.75	6	5	1	5	1,000	182	1900
1,831	4	J. W. Adle and C. Carmichael	W. Channel of Gros Ventre River	2	8	6	1		200	343.72	1900
1,832	1	Charles R. Macy & Co.	Box Elder	.25	4	3	1	5	25	8	1898
1,833	3	William E. Hymer	Springs	.5					280		*
1,834	3	Hymer and Hill Mining Co.	Shoshone River	8	4	4	4	4.7	8,000	1,280	*
1,835	3	W. F. Cody and Charles DeMaris	Hot Springs								*
1,836	1	Andrew Jackson	Meadow Creek	1	3	2	1	10	75	46	1899
1,837	1	" "	Redfern Cr.	.33	3	2	1	10	20	24	1899
1,838	3	F. S. McManigal	Big Horn River	3.25	4	3	1.5	2.8	1,600	280	1899
1,839	4	William Vineyard	Green River	7.25	8	4	3	1.5	4,000	2,490	1900
1,840	1	A. T. Holmes	Lower Beaver Cr.	3.29	8	4	2	10	3,200	360	1899
1,841	1	" "	" " "	5	8	4	2	10.5	5,000	510	1899
1,842	2	Laura E. Neeves	South Tongue River and Clear Springs	.87	4	2	1	10	250	67	1899
1,843	4	William Irvine	Pine Cr.	2.5	4	3	1	10	25	†	1899
1,844	4	W. J. Wright	West Fork of New Fork	7.5	5	4	1	6	450	275	1900
1,845	1	Asa J. Covington	Broom Cr.	1.76	6	4	1	4.74	260	135	1900

* Not approved. † Domestic.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,846	4	Christ Nelson	E. Channel Black's Fork River	.04	4	3	1	8	$ 100	133	1899
1,847	2	S. E. Curtis and B. D. Loy	Middle Fork Powder River	1.75	6	4	1	5.28	1,000	112.6	1899
1,848	1	Warren Live Stock Co	Clear Cr.	.75				5		14	1899
1,849	4	O. E. and V. M. Sill	West Fork of New Fork	4	7	5	1.5	5	1,000	640	1900
1,850	4	F. B. and E. W. Morris	Pocket Cr.	1.5	3	2	1	5.28	200	57	1899
1,851	4	Jacob Ike et al.	East Fork of New Fork	2.5	4	2.5	1.5	27	600	299	1900
1,852	4	Maggie Lewis	Clear Cr.	.75	2.5	1.5	1		60	40	1899
1,853	4	" "	" "	.75	2.5	1.5	1		60	40	1899
1,854	4	Alonzo Baker	Salt River	2	8	6	1.5	7	300	160	1900
1,855	3	J. D. Gill	No Wood River	3	8	5	1.5	8	500	640	
1,856	3	Mary J. Howard	" " "	.75	3	2	1	8	150	25	1899
1,857	1	Tim Mahoney	Willow Cr.	.5	3	1	1	5	100	26	1899
1,858	4	Albert Nelson	Gros Ventre River	2	8	6	1	5.28	800	300	1902
1,859	4	J. F. Fuller	Black's Fork Cr.	.5	4	3	3	15	40	80	1899
1,860	4	" "	" " "	1	4	3	1.5	8	150	76	1899
1,861	4	Jacob Jones	Branch Ham's Fork Cr.	1	4	3	1.5	7	200	63	1900
1,862	4	M. S. Bigler and C. C. Leavitt	Sheep Cr.	.31	1	.66	.66	10	3	*	1898
1,863	4	Nels Hoagland	Gros Ventre River	2.5	7	5	1	5.28	450	320	1901
1,864	4	R. A. Wallace	Black's Fork Cr	1	5	4	1.5	12	150	125	1900
1,865	1	John Karman	Bolton Cr.	1.25	5	3	1.5	7	200	80	1899
1,866	4	Hannah Nelson	Cedar Cr.	5	4	3	1.5	15	100	160	1900

* Domestic.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions: Length in Miles	Dimensions: Width: Top	Dimensions: Width: Bot'm	Dimensions: Depth	Dimensions: Grade, Feet per Mile	Estimated Cost	No. of Acres	Date for Completion
1,867	4	J. P. Hemmert et al.	Cedar Cr.	2.5	6	4	1.5	13	$ 150	400	1900
1,868	1	O. P. Reed	Little Medicine	1.5	5	4	1	3	250	155	1899
1,869	1	W. H. Wolford	Cottonwood Cr.	1	5	3	1	4	50	160	1900
1,870	1	" "	Springs	1.5	4	2	1	50	50		1899
1,871	1	D. D. Wagoner	Cedar Cr.	.25	1.5	1.5	.5	5	25	20	1900
1,872	1	" "	" "	1	3.5	3	1	10	175	140	1899
1,873	1	A. A. Huston	Soldier Cr.	.94	4	4	2	11.56			1901
1,874	4	People's Canal Co.	Henry's Fork	5	10	8	1.5	6.5	5,000	2400	1902
1,875	4	John Thompson and Elizabeth C. Kerbey	Failer Cr.	.5	8	6	1	4	300	260	1900
1,876	1	J. E. Hoffman	Horse Shoe Cr.	2.89	7	5	1	2.64	1,530	274.5	1899
1,877	1	O. S. Schmidt	South Fox Cr.	.65	4.5	2	1.5	5.28	500	160	1900
1,878	1	J. T. Williams	Sage Cr.	.25	5	3	1	5.28	50	5.5	1899
1,879	1	" "	" "	.25	5	3	1	5.28	90	9.5	1899
1,880	1	" "	Williams' Spring						125	*	1899
1,881	1	" "	White Rock Spring						125	*	1899
1,882	1	" "	Willow Spring						200	*	1899
1,883	1	" "	Lake Spring						100	*	1899
1,884	4	Joseph Bird et al.	Bear River	15	11	7	2	8	3,000	2732	1901
1,885	4	W. S. and D. H. Scott	Green River	1.5	8	6	2	4	1,200	1410	1901
1,886	1	E. W. Bennett	Battle Lake	2	10	6	2	26			1901
1,887	1	N. B. Noble	Battle Cr.	1	10	6	2	26.4	3,000	†	1901

* Stock. † Mining.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions Length in Miles	Width Top	 Bot'm	 Depth	 Grade, Feet per Mile	Estimated Cost	No. of Acres	Date for Completion
1,890	2	Jacob Lang	Skull Cr	1	6	7	2	8	$ 200	200	1900
1,891	4	William H. Moffitt et al	Failer Cr	2.5	8	6	1	5.28	600	426	1901
1,892	2	A. L. Ripley	Little Missouri	1.5	5	4	1	5.25	300	87	1900
1,893	3	Norm Nott	Bad Water Cr	.83	3	2	1	15	200	68	1899
1,894	4	Morgan Bond	Smith's Fork Cr	.25	3.5	2.5	1	20	50	120	1899
1,895	4	" "	" " "	.25	2	1	1	20	25	18	1899
1,896	4	M. M. and Marcia Briggs	South Piney Cr	.75	5	3	1	30	400	258	1900
1,897	4	D. H. Johnston et al	Green River	2	8	6	2	5.28	800	948	1901
1,898	1	J. M. Thompson	Fox Cr	1	4	3	1	5.28	220	142	1900
1,899	1	I. C. Miller	Hurt Cr	.34	3	2	.5	5	40	14	1900
1,900	1	" "	Dewees Cr	.80	2	1	.5	6	50	90	1899
1,901	1	" "	" "	4.61	2	1	.5	6	90	102	1899
1,902	1	" "	" "	1.27	2	1	.5	5	75	120	1900
1,903	1	Allen Laughlin	Horse Shoe Cr	3.4	6	4	1	4	250	101.66	1899
1,904	2	Albert Weaver	Sour Dough Cr	.5	3	2	1	5.25	150	40	1899
1,905	2	H. M. Preston	Spring	.02	1.5	1.5		3	40	*	1900
1,906	1	P. J. McIntosh	Sweetwater River	2.26	7	4	1	3	450	304	1899
1,907	1	R. H. and J. J. Hopkins	Big Sage Cr	3.33	6	4	1.5	3.7	556	568	1900
1,908	3	F. A. Welty	Five Mile Cr	3.75	5	4	1	6.66	300	120	1900
1,909	1	Samuel Hixson	South Fork Little Laramie	1.71	4	3	1	5.28	420	81.30	1900
1,910	4	James Hebdon	Hebdon Cr	1.5	2	2	.5	30	50	80	1900
1,911	4	Ira J. Ames	Stewert Cr	1.5	2.5	2	.83	20	75	80	1900

* Stock.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,912	4	J. C. Bond	Smith's Fork Cr.	.96	4	3	1	8	$ 150	160	1898
1,913	2	C. W. Bedell	Spring	.25	.33	.33	2.5	5	150	*	1900
1,914	1	William M. Center	Cow Cr.	1	5	3	1	10	150	92	1899
1,915	4	Michael McGovern	Horse Cr.	.75	6	4	1	5.28	300	290	1900
1,916	4	Peter McGovern et al	" "	3	10	8	1.5	8	1,500	1,563	1901
1,917	4	Deloss E. Bair	West Fork of New Fork	1	6	4	1	8	250	305	1900
1,918	3	Daniel Root	Sioux Cr.	1.84	3.5	2.5	1.5	10	600	309	"
1,919	4	William E. and T. J. Mills	North Piney Cr.	8	7	5	1	48	800	480	"
1,920	3	Hans B. Behmer	Grey Bull River	1.25	4	2	1	5	200	160	"
1,921	3	C. A. Perkins	Perkins & Kinney Res'v'r.	3.5	7	5	1	6	800	799	1901
1,922	4	B. C. Lamb et al	North Piney Cr.	1.25	8	6	1	10.56	800	1,066	1900
1,923	3	Louis Calvin	Beaver Cr.	1	6	4	1	5.28	400	48	"
1,924	2	Charlotte Shepardson	Spring	.12					100	*	1899
1,925	2	Mont Shepardson	"	.2	1.5	1.5		6.47	150	10	1900
1,926	1	William E. Marvin	Point Mountain Cr.							160	"
1,927	1	L. L. Laughlin	Bar M. Cr.	1.87	5	3	1	27		160	1898
1,928	4	C. C. Belknap and J. Noble	West Fork of New Fork		9	7	1	4	1,000	842	1900
1,929	3	John Cunningham	Little Warm Spring Cr.	.75	4	3	1	10	100	140	1899
1,930	4	H. B. Rowe	Smith's Fork Cr.	1	8	6	2	4	50	120	"
1,931	1	Noah Young	Spring Cr.	.62	5	3	1	8	100	58	"
1,932	2	Z. G. Deuel	Springs	.75	4	2	.25	26	250	30	1900
1,933	1	H. J. Howard	Magpie and Cow Crs.	1.5	6	4	1	5	300	240	"

* Domestic.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,934	2	Samuel Poole	Miller Cr.	1	4	3	1	6	$ 250	56	
1,935	1	J. P. Hanson	Spring	.5	3	2	.5	6	100	24	1899
1,936	2	J. S. Bonsell	Old Woman Cr.	1.5	3	2	2	5	500	20	1899
1,937	2	George H. Spracklen	Spracklen Branch	.5	4	3	1	12	200	26	1899
1,938	1	James A. Hill	Cole Cr.	.75	5	3	1.5	5	150	44	1900
1,939	1	P. C. Nicolaysen	Cole Cr. and Lakes	.5	5	3	1.5	5	300	29	1900
1,940	4	W. A. Thompson	Deer Butte Spring	.75	5	3	1	15	100	40	1899
1,941	3	S. E. Maxson	Upper Canon River	1.35	4	4	1	8	400	108	1900
1,942	4	William Snyder	Horse Cr.	6	7	5	2	6.66	500	320	1900
1,943	4	Harvey H. Hittle	East Fork of New Fork	1.5	3.5	2.5	1	24	600	134	1900
1,944	3	Paul Reichel et al	Six Mile Cr.	2.25	6	5	1	6.66	250	395	1900
1,945	1	Nettie L. Fouts	South Spring Cr.	2.75	4	3	1	13.5	200	200.28	1899
1,946	1	J. M. Nelson	Willow Cr.	.87	3.5	2.5	1	4	300	70	1899
1,947	4	Frank Overy	Smith's Fork Cr.	.75	4	3	1	4	15	70	1899
1,948	1	O. J. Densmore	Silver Spring Cr.	1.25				10	150	30	1899
1,949	2	Mahuker & Willson	Big Beaver Cr.	3.5	6	4	1.5	10	500	360	1901
1,950	1	E. H. Ryan	Spring Cr.	2	6	3.5	1.5	6	500	189	1900
1,951	1	John Mahoney	Muddy Cr.	.75	5	3	3	8	500	46	1900
1,952	1	" "	" "	.75	5	3	3	8	500	69	1900
1,953	3	Jacob Becker	Deep Cr.		5	3	1.5	10	1,200	301.3	1900
1,954	1	William Johnson	Cottonwood Cr.	1	4	2	1	8	75	55	1899
1,955	1	Ole Frantzen	Cooper Cr.	1.5	3.5	1.5	1	8	150	100	1899

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
1,956	1	Jesse Johnson	Middle Fork Cottonwood	1	4	2	1	8	$ 150	44	1899
1,957	4	Ann Swan	South Piney Cr	1.5	6	4	2	32		241	"
1,958	4	" "	" " "	.75	4	3	1	30	150	56	"
1,959	4	Grant Swan	" " "	.5	6	4	1.5	28.8		60	"
1,960	4	" "	Middle Piney	.75	6	4	1	12.5		90	"
1,961	4	Henry Lester and Harriet Brown	Sulphur Cr	.5	3	2	1	10	50	38	1901
1,962	2	John Baugh	Arch Cr	1	6	4	1	5.5	500	140	1900
1,963	2	" "	" "		6	4	1	5.5	500	55	"
1,964	3	Emmett Jacobs	Rock Cr	1.5	3	2	1		250	120	"
1,965	1	Byron Marsh & Co.	Muddy Cr	1.5	5	3	3	8	700	248	"
1,866	1	" " "	" "	2.5	5	3	3	8	1,000	298	1901
1,967	1	George F. Doane	Tributary Battle Cr	.5	2	1.66	.33	30		*	1902
1,968	1	Neil Matheson	Bar M. Cr	4000 ft	4	2	1	50	100	160	1899
1,969	4	Joseph H. Neville	Spring	2	3	2	1	20	150	75.84	1900
1,970	4	" " "	"	40 ft.	3	2	1	15	50	28	"
1,971	1	Leon H. Startzell	Austin Cr	1.75	4	2	1	5	400	160	"
1,972	1	" " "	" "	1	4	2	1	5	400	160	"
1,973	1	Amos Baggatt	Grand Encampment	2.25	6	4	2	6		350	1899
1,974	4	Niels Hansen	North Beaver Cr	2	7	5	1.5	5.28	600	244	1900
1,975	1	Charles Van Sickle	Big Hermit Cr	1370 ft				†		*	"
1,976	2	W. J. Burton and J. M. Young	Middle Fork Powder R	3.25	6	4	1	5.28	1,000	263	"
1,977	1	Jackson Hammer	Nigger Cr	.25	2	1.5	.83		50	10	1899

* Mining. † Pipe Line.

PERMITS TO APPROPRIATE WATER—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
1,978	2	Lucretia Marchbanks	Spring	53 ft.	.66	.58		3.2	$ 75	1	1900
1,979	1	Fred W. Curtis	Curtis Cr.	1.25	6	4	1.5	7	300	181.5	"
1,980	1	Willard J. Wright	West Fork of New Fork	1	5	4	1.5	6.6	400	147	"
1,981	1	Joseph H. Walton	Clear Cr.	.75	4	3	1	6	50	180	"
1,982	1	Lyman B. Cooper	Owl Cr.	1.5	4		1	7	200	78	1899
1,983	1	W. S. Adams et al	Brush Cr.	8.75	12	8	2	4	4,000	1,280	1901
1,984	1	F. G. McCrossin	Sawmill Canon Springs	.5	2	1	1	3.5	25	13	1899
1,985	1	" "	" " "	.125	2	1	1	3.5	75	2	"
1,986	1	D. P. Smith and U. S. Harris	South Fork Little Laramie	1.5	5	3	1	5	200	115	"
1,987	1	W. S. Miller	Sweetwater River	.9	6	3	1	3	180	100	"
1,988	3	Jennette E. Calloway	Hard Pan Cr.	3	3	3	1	10	600	69.6	"
1,989	4	William D. Lafferty	Little Twin Cr.	.5	5	4	1	8	100	116	1900
1,990	1	Edward Haggarty	North Fork Battle Cr.	.75	2	1.5	1.5	26	800	*	1901
1,991	4	William D. Lafferty	Big Twin Cr.	.5	5	4	1	8	200	170	1900
1,992	1	Herod Johnson	Spring Cr.	.5	3	2	1	8	150	15	"
1,993	1	" "	Cooper Cr.	1	3	2	1	8	200	30	"
1,994	4	James Jenson	Mill Cr.	.75	2	1.5	1.5	10	50	†	1899
1,995	4	William Osborn	Jackson Cr.	1.75	3	2	1.5	10	200	320	"
1,996	1	Donald McPhail	Jack Cr.	3.25	6	4.5	1.5	6	700	535	1900
1,997	1	Mary E. McPhail	Springs and Seepage	1.5	4	3	1	4	150	180	"
1,998	1	William L. Connelly	Spoon-hill Cr.	1.25	4	2	1	2.63	150	50.31	1901
1,999	1	Fred W. Curtis	South Harris Cr.	1.12	5	4	1.5	7	100	142.5	1900

* Mining. † Domestic.

PERMITS TO APPROPRIATE WATER—*Concluded.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
2,000	1	Fred W. Curtis................	North Harris Cr. Spring..	.5	3	2	1	4	$ 50	12.5	1901
2,001	1	" " "	Curtis Cr. Reservoirs A. B. C. D.	1.5	5	4	1.5	7	100	90.5	"
2,002	1	" " "	Canon Cr..............	.625	3	2	1	7	50	25.5	"
2,003	1	" " "	S. Harris Cr. and Res'voir	.625	4	3	1	7	50	49	1900
2,004	1	" " "	N. Harris Cr. and Res'voir	1.125	5	4	1.5	7	100	129	"
2,005	4	Charles Bird et al..............	South Piney............	20	12	9	1.5	4	3,500	1433	1902
2,006	1	Steven F. Smith..............	Indian Cr..............	1	3	2	1	7		41.75	1900
2,007	4	Thomas Smith................	North Piney Cr..........	2	8	6	1	40	600	275	"
2,008	1	Otto E. Tisch..................	Blue Grass Cr..........	500 ft	6	4	2	15	500	*	"
2,009	4	John M. Van Dervert.........	Failer Cr...............	1.5	6	4	1	4	250	160	"

* Mining.

APPLICATIONS FOR ENLARGEMENT.

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
94	3	Curtis L. Simmons	No Wood River	3.5	8	6	1	3	$ 600	160	1896
95	1	Alice Hardman	Sand Cr	4	10	8	1.33	5	200	240	1895
96	3	Asa C. Shuck	Paint Rock Cr	9	24	10	6.3	2	5,000	3920	1897
97	3	Francis E. Rice	North Fork Popo Agie	1					250	80	1896
98	4	George M. Coleman	Dry Cr	1.5	4	3.5	1.5	50	35	120	“
99	2	Harmon Fraker	Red Fork Powder River	1	5	3	1	10	50	160	“
100	2	“ “	“ “ “ “	1	3.5	2.5	1	10	100	160	“
101	3	J. W. Dilus, J. W. Shurts and J. H. Tudeman	Grey Bull River	6	15	9	4	5	500	360	“
102	3	A. D. McDonald	Shell Cr	17	22	15	5	5.28	20,000	10400	1897
103	3	M. Standish and W. Horton	Otter Cr	2.5	12	8	1.5	5	1,000	440	1896
104	3	Yellowstone Park Land and Irrigation Association	Stinking Water River	18	30	15	4	5	39,000	6000	1896
105	3	L. Guynup	Grey Bull River	6	2.5	2	1.5	6	100	320	“
106	4	John F. Astle	Swift Cr	2.75	15	14	1.5	6.75		80	“
107	4	G. A. Dakin, L. Farrell and N. L. Venter	Swift Cr	2.25	7	6	1.5	20		195	“
108	4	E. Hepworth	“ “	2	15	14	1.5	6.75		70	“
109	3	Allie Trepus	Grey Bull River	3.5	7	6	1	6	300	90	“

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
110	4	James Jensen, Sr.	Swift Cr.	4	16	15	1.5	15	$ 50	80	1896
111	4	Hans P. Nelson	" "	6	15	14	1.5	15	50	120	"
112	4	William Degraw	La Barge Cr.	2	4	3	1	5.28	250	160	"
113	4	Jens C. Jensen	Swift Cr.	2	7	6	1	12	50	120	"
114	4	Jacob Heischler	Fontenelle Cr.	1.75	10	5	1.5	7	200	160	"
115	4	A. Hokason	Dry Cr.	2.75	8	7	1.5	10	45	320	"
116	4	B. L. Gardner	Swift Cr.	2.5	10	10	3	9	50	246	"
117	2	A. M. Brock	North Fork Powder River.	3.41	7	5	1.5	5.3	250	240	"
118	4	W. H. Kennington	Swift Cr.	2.75	15	14	2	10		340	"
119	4	Samuel Henderson	Dry Cr.	1.5	8	7	1.5	10	25	265	"
120	4	Ole Peterson	Swift Cr.	6	16	15	1.5	15	50	50	"
121	1	Thomas C. Clayton	Box Elder Cr.	.9	13	5	4	5.8	1	67	"
122	4	Stumpp & Veigal	Dry Cr.	2.5	7	6	1	15	50	205	"
123	4	C. P. Anderson	Swift Cr.	5	15	14	2.5	6.66		*	"
125	2	Benton & Avery	Sand Cr.	3.75	4	3	2	13.5	500	720	"
131	3	John Weintz	Paint Rock Cr.	3	18	6.5	1	5	300	280	1897
152	4	N. J. Christopherson and P. L. Olsen	South Branch of Dry Cr.	1.5	6	5	1	15	75	220	1896
157	3	John Mead	No Wood River.	1.25	5	4	1	15	50	15	"
124	4	North Canal Ditch Co.	Swift Cr.	6	20	18	1.5	15	1,000	2090	1897
126	4	James Clark	Salt River.	1.75	8	7	1.5	5	100	160	1896
127	4	A. F. Bracken et al.	Strawberry Cr.	4	9	7	2	25	300	820	1897

* Milling.

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
128	4	C. M. and O. Kimball and S. D. Allen	Strawberry Cr.	2.75	7	6	1.5	8	$ 50	180	1896
129	4	R. G. Bowles	Dry Cr	1.75	9	8	1.5	10		190	1897
130	3	W. B. Beck, W. W. Shaver, H. Griffin, H. A. Barrows and W. S. Griffin	Grey Bull River	20	30	24	4	5.2	30,000	17,591	*
132	4	Bruce, Peterson & Co.	Salt River	1.75	6	5	1.5	5	1	40	1897
133	4	W. A. Hodges	" "	8.5	16	14	1.5	33.33		1,501	"
134	4	George R. Hardman	Dry Cr.	.75	6	5	1	9		10	"
135	4	W. A. Hodges	Crow Cr.	3.75	12	10	2.5	6.66	50	345	"
136	4	W. B. Preston and L. R. Martineau	Strawberry Cr.	2	7	6	1.5	14	100	880	"
137	4	William B. Preston	Strawberry Cr.	1.5	8	7	2	20	100	1,070	"
138	4	Alexander Hardman	Cottonwood Cr	3.75	14	13	2	9		30	"
139	4	C. Huner and J. U. Moser	Strawberry Cr.	1.75	8	7	2	7	100	110	"
140	4	Edmond McLatchey	Dry Cr.	.75	5	4	1.75	9		40	"
141	4	John Baird, John Highbee, A. and A. J. Vail	Flat Cr.	2	8	7	2	7	150	190	"
142	4	J. H. Perkins and G. Hardman	Dry Cr.	2.25	8	7	1.5	20	50	230	"
143	3	Avent Bros.	Grey Bull River	4.66	11	6	2.5	4	1,500	1,400	"
144	3	C. D. Chrisman	Big Popo Agie River	1.5						25	1895
145	3	" "	" " "	2.25						35	"

* Not approved.

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
146	3	J. B. Okie	Bad Water Cr.	.96	7	7	1.5		$ 1,200	440	1898
147	4	Elizabeth Clark	Salt River	2.5	5	4	1.5	5	40	40	1895
148	4	William Gomm	Cottonwood Cr.	3.5	6	5	1	20	50	120	1897
149	4	Charles Hoy	Salt River	1.5	4	3.5	1	15	10	40	1896
150	1	City of Cheyenne	Crow Cr.	3.66	10	6	2	5.28	1,524		1895
151	3	C. J. Long	Bridger Cr.	1.77	7	6	1	10	100	280	1896
153	4	George Merritt et al	Strawberry Cr.	4	8	7	1.5	8	100	385	1897
154	4	J. B. and R. Mathie	" "	4	8	7	1	14		270	"
155	3	George W. Wise	Meeteetse Cr.	1.25	8	4	6	10	250	53.3	"
156	4	A. Huicks, T. L. Van Noy and John Highbee	Strawberry Cr.	5.5	8	7	2	14		170	"
158	4	E. E. Barker and G. Merritt	" "	3.5	6	5	2	14	300	110	"
159	4	E. N. and M. E. Carter and Maurice Groshon	Branch of Black's Fork	1.288	3	2	1	12	150	112	"
160	4	" " " " "	" " " "	1.343	3.5	2.5	1	12	150	70	"
161	1	Frank R. Parker	Big Laramie River	9	14	10	2	4	1,000	4000	"
162	3	J. M. Hornecker	Big Popo Agie River	3	5	3	2.5	17		133	1896
163	3	Sarah Hornecker	" " "	3	5	3	2.5	17		75	"
164	1	W. H. Thayer	Batts Cr.	1.166	12	6	3	5	50	180	"
165	3	Geo. Marquette and D. F. James	Stinking Water River	4.5	9	6	1.5	4.5	500	295.9	
166	4	G. and M. A. Flickiger	Willow Cr.	2.75	12	10	2.5	14		160	"
167	4	John Neild	Dry Cr.	3	4	3	1	15	40	80	"

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
168	4	Thomas Neild	Swift Cr.	2.5	8	7	1.5	8	$ 25	80	1896
169	2	S. J. Grinnell	Big Piney Cr.	7	12	8	2	13.33	1,323	370	1897
170	2	R. W. Fullerton	" " "	8	12	8	2	13.33	1,323	155	"
171	4	Levi E. Merritt	Strawberry Cr.	4	7	6	2	14	100	160	"
172	1	V. C. Kerr	Twin Cr.	3.5	16	14	4	4	700	835	1898
173	1	W. H. Wolford	Grand Encampment	9.75	21	15	3	2.64	1,500	9840	"
174	2	D. J. Poole	Big Piney Cr.	7	12	8	2	13.33	1,323	174.6	1897
176	3	Riley Kane. A. F. Trone and R. E. Rath	Shell Cr.	3.4	14	6	1	7.92	439	353.9	"
177	1	Wagner & Bayer	Goose Cr.	1	3	2	1	8	300	100	"
178	3	Henry Jordan	No Wood River	.74	12	12	3.3	21	3,000	80	"
179	1	T. Sun and J. G. Macfarlane	Sweetwater River	3.3					30,000	6280	"
180	1	R. E. Hollenbeck	Laramie River	3	14	4	1.5	2	200	140	"
181	3	O. P. Hardee	Beaver Cr.		4	3	1	10	150	70	1896
182	2	Samuel Dickey	Big Piney Cr.	4.5	5.5	4	1	4.5	350	100	1897
183	1	J. N. Thompson	Laramie River	1	8	4	2	1.5	1,400	14.7	"
184	1	John Reid	Little Laramie River	3.5	6	5	1	3	500	400	1898
185	3	Fruit Ditch Co.	Paint Rock Cr.	26.6	17	12	2.5	10.56	16,500	9762	"
186	1	Fetterman Canal Co.	North Platte	24	16	10	3	1.25	10,000	3000	"
187	2	P. H. Anderson	Clear Cr.	3.5	6	4	2	4	1,100	71	1897
188	3	Shoshone Land and Irrigation Co.	Shoshone River	30	65	50	6	2.5	100,000	1920	1896
189	1	*A. Hemingway	Deer Cr.	2.5	50	30	9		200	76	1897

* Assigned to Hemingway Ditch and Reservoir Co.

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
190	2	Charles Screibers et al	Tongue River	3.5	7.5	3.5	2	4	$ 500	170	1897
191	2	York Ditch Co.	" "	1.75	5	3	1	4.22	300	410	"
192	2	Grinnell Live Stock Co.	Big Goose Cr.		56	3	1.5	8	600	299.4	"
193	2	N. K. Griggs	Spring	2.5	3	2	1	6	500	109	"
194	3	W. G. Feyhl	Grey Bull River	3.5	15	7	4	6	500	159.60	"
195	3	J. A. Winslow	" " "	6	10	8	1	5	200	218	"
196	1	A. B. Conaway	Medicine Bow River	9.75	13	7	3	40	1,000	864.88	"
197	2	W. E. Keys and E. R. Maris	Beaver Cr.	2	4	2	2.5	8	300	150	"
198	4	J. Luthi and R. Wolfley	Strawberry Cr.	1.5	7	6	2	7	50	235	"
199	3	C. A. Scott	Grey Bull River	2.25	8	6	1	6	250	128.6	"
200	3	T. Osborne, Jr., et al	" " "	3.5	12	6	2	7	400	191.1	"
201	3	Ira U. Waters	Stinking Water River	1	17	5	6	3.33	200	80	"
202	3	R. A. Winchester	Owl Cr.	3.5	10	8	1	5	800	1252.9	1898
203	1	John Nelson	Cow Cr.	3.75	5	4	1.5	6.5	200	480	1897
204	1	Erick Hugland	Medicine Bow	9	10	7	3		600	1450	1896
205	3	J. A. Schuelke	Grey Bull River	5	8	5	2	2.5	3,500	867	1897
206	2	John C. Ryan	Lytle Cr.	3.5	12	5	5	5	225	360	"
207	4	F. Neuenschwander	Strawberry Cr.	1	5	4	2	14	100	80	"
208	3	Samuel Cotner	Shoshone River	4.5					150	320	"
209	4	Henry Sellon	Black's Fork	2.543	4	3	1	12	100	240	1898
210	3	Yellowstone Park Land and Irrigation Co.	Shoshone River	18	30	15	4	2	5,000	1120	"

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
211	3	Charles A. Perkins	Grey Bull River	1	17	16	1	5.3	$ 150	200	1897
212	3	V. L. Black	" " "	2.5	9	9	1	5.3	500	160	"
213	3	L. E. Standish	North Fork Popo Agie	2.5	3	2	1	10	500	144	1896
214	2	W. H. Sollars	Big Piney Cr.	1.5	6	3	1.5	34	100	8.5	"
215	3	J. W. McCann	Shoshone River	3	16	8	4	6	300	117	1898
216	3	Dempsey Canal Co.	Big Horn River	10	14	10	2	2.64	7,000	5408.7	1896
217	2	George Kaltenbach	Middle Fork Powder River	2	6	4	1	5.28	250	78.2	1897
218	4	James Guild et al.	Big Muddy Cr.	.37	10	6	2	5	250	165	1899
219	2	J. E. Allen, B. F. Ketcham and E. A. Whitney	Tongue River	4.5	10	6	2	10	1,500	355	1897
220	3	D. W. Hunsinger	Medicine Lodge Cr.	1					100	60	"
221	1	Frank R. Schoen	Medicine Bow River	3	5	2	1.5	25	200	300	"
222	4	C. Guild & Sons	Muddy Cr.	1	5.5	4.5	1	8	75	128	1898
223	4	C. E. Olive et al.	Black's Fork	7.33	8	3	3	8	500	2916	1899
224	4	James Davison	Ham's Fork River	2.5	8	6	3	5.28	500	360	1898
225	4	F. Neuenswander	Willow Cr.	2.75	12	10	2.5	14	100	160	"
226	2	R. L. Taylor	Middle Fork Powder River	3.75	7	5	1	5.28	1,500	159.8	"
227	4	Phebe H. Hamp et al.	Fontenelle Cr.	7	12	10	4	8	1,000	865	1899
228	1	James Carey	Muddy Cr.	3	10	8	2	5	650	530	1898
229	1	Samuel Coen	Rock Cr.	3.5	5	3	1.5		200	130	"
230	3	A. F. Ellison	Grey Bull River	1.75	8	6	1	5.28	150	160	"
231	4	Eva V. Bowman	Fontenelle Cr.	3.6	8	6	2	6	450	165	1899

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
232	3	George S. Allen	Beaver Cr.	2.5	8	6	1	6	$ 500	81	1898
233	3	Big Horn Basin Development Co.	Grey Bull River	8.5	28	20	4	5.2	100,000	24,130	1901
234	2	J. B. Menardi and C. J. White	South Piney Cr.	6.25	8	4	2	15	2,000	610	1898
235	2	E. J. Brooks	" " "	2	6	2.5	1	5.28	100	20	"
236	1	M. B. Ledford	Snake River	2	6	5	1	5	500	120	1897
238	3	Warner, Morton & Carpenter	Ten Sleep Cr.	6	10	8		5	2,000	208	1899
239	2	Eliza T. Hurlbut	Big and Little Goose Cr.							70	1898
240	1	Thomas Shaw	Cottonwood Cr.	1	7	5	1	6	100	20	*
240	1	Joseph Rutherford	Cottonwood Cr.	1	3	3	1	6	200	25	
241	1	David Ellis	Medicine Bow	.75	5	4	1	5	40	40	1897
242	1	E. H. Kimball	Box Elder and School Cr.	3.5	7	5	1	2.9	200	89	1898
243	1	Edward Cheesbrough	Medicine Bow River	9	6		2		600	730	"
244	4	Charles L. Garver	Smith's Fork Cr.	3.5	6.5	4	1.5	7.5	300	640	1899
245	1	William Dickison	Mill Cr.	.3	2.5	2.5	.8	6.66	100	25	1896
246	1	Hugland Brothers	Medicine Bow River	6	5	4	1	40	100	320	1897
247	2	A. R. and I. C. Frisbie	Tongue River	2.75	7	4	1.5	2	200	190	1898
248	2	Rudolph Mueller	S. Fork Big Piney Cr.	3.5	10	8	1	13.66	500	91.5	1899
249	2	T. Hamel	Tongue River	6.5	9	7	1.5	4	600	140	1897
250	3	C. F. and E. H. Rathbone	Wood River		8	6	1	8	200	160	1899
251	2	Argus B. Ennis	Big Goose Cr.	1.5	5	3.5	1	5	250	80	"
252	4	M. and C. M. Gard	Fisk Cr.	2	7	6	1.5	40	200	302	1898
253	4	Moses Byrne	Little Cr.	.25	5	3	1		35	40	"

* Not approved.

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
254	3	George R. Sawyer	Otter Cr.	1.5	6	5	1	6	$ 100	40	1899
255	2	Ninnie Findahl	Big Rapid Cr.						5	40	1898
256	3	H. E. Cheeseman	Wood River	4.75	12	10	1	5	400	152	1899
257	2	Sarah E. Harding	Twin Cr.						30	40	1898
258	4	C. J. Erickson	Smith's Fork	2.5	4.5	3	1	15	40	160	1899
259	4	Bowne & Schabel	South Piney Cr.	5	10	8	1.5	6.66		200	1898
260	1	Hans Larsen	Mill Cr.	.75	6	4	1.5	6	100	155	"
261	2	D. D. Darling	Big Goose Cr.	1.125	5	3	1	10	125	38	"
262	3	S. and C. E. Martin	South Fork Shoshone R.	4.5	12	6	1.5	4.5	150	223	1899
263	3	Andrew G. Lewis	Grey Bull River	3	10	8	1	7	200	160	"
264	2	J. M. Enochs	Piney Cr.						100	55	1898
265	1	Ludwig Eggart	Big Box Elder	1	6	4	1	5	75	20	"
266	3	A. Velter and J. M. Baldwin	Grey Bull River	4.5	9	6	2	8	200	1,122	"
267	1	George H. Cross	La Prele	2.75	8	5	1.5	5	1,000	142	"
268	3	Ozro P. Davis	Wood River	1.25	7	5	1	6	75	60	1899
269	3	" "	" "	2	8	6	1	6 to 25	150	85	"
270	3	W. R. Williams	Brokenback Cr.	1.37	5	4	1.5	10	50	88	1897
271	3	W. G. Whaley	Shell Cr.	6	12	10	1.5	5.28	1,500	579	1899
272	1	Hemingway Ditch and Res'v'r. Co	Deer Cr.	1.5	8	6	1	4	300	89	"
273	2	George W. Wagner	Columbus Cr.						900	185	1898
274	4	Charles Todd	Slough of Bear River	.05	1.5	1	1	10	40	30	1899
275	2	Charles L. Decker	Wolf Cr.	2	6	5	2.5	8	200	110	1898

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
276	2	T. R. Dana	N. Fork West Pass Cr.		5	3	1	15	$ 400	320	1898
277	4	Edgar N. Carter	Black's Fork Cr.	1	5	3	2	10	100	40	1899
278	3	E. H. Erskine	Grey Bull River	2.25	12	5	4	5	300	55	1898
279	2	Mary M. Devol	Red Canon Cr.						25	100	1899
280	1	Louis A. Corbett	Elkhorn and Sage Cr.	1.75	4	2	2	5	100	131	"
281	1	Robert Pahlow	Laramie River	17	18	15	1.5	5	2,000	1920	1898
282	2	Mattie A. Stout	Piney Cr.	2.25	5	3	1	5 to 10	250	25	"
283	4	Chapman Canal Co.	Bear River	36	36	24	6	3	10,000	47680	1901
284	4	Eliza Clark	Crow Cr.	3.5	10	9	2	10	20	40	1898
285	4	C. J. Early	Black's Fork Cr.	1.75					75	75	
286	3	Oliver W. Peterson	Grey Bull River	4	12	10	1.5	6	450	200	1899
287	3	James E. Parker	Grey Bull River	3	9	7	1	6	300	167	"
288	2	A. T. Yonkee	East Pass Cr.	6					350	70	1898
289	2	R. L. McNeese	Big Goose Cr.	.25	4	2	1	13.33	50	15	"
290	3	P. Jimerfield	Grey Bull River		8	6	1.5	7	300	156	1899
291	4	A. W. Smith	North Piney Cr.	4	8	7	1.5	5.28		320	"
292	3	Otto Franc	Grey Bull River	2.5	16.5	10.5	2	10	3,000	1000	"
293	4	E. N. Carter	Black's Fork Cr.	.75	8	5	1.5	15	100	1120	"
294	2	H. M. Akins and John Kennedy	Twin Cr.		4	2	1	18	200	50	1898
295	4	John W. Stower	Smith's Fork Cr.		12	8	2	4.5	2,500	1720	1900
296	1	Fred W. Curtis	La Prele	2.75	8	6	1.5	3	600	69.5	1899
297	1	James Moran	Horseshoe Cr.	1.5	5	4	1.5	4	150	40	1898

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
298	2	W. H. Babione	South Piney Cr.	4.5	5	3	1	13	$ 500	55	1899
299	3	Mrs. C. Bader and C. Bame	Bad Water Cr.	1.5	5	4	1	7	200	323	1898
300	2	Mary C. Perry	E. Fork Big Goose Cr.						600	60	"
301	2	" " "	Little Goose Cr.						250	30	"
302	4	J. W. Chrisman	Ham's Fork Cr.	2.5	7	5	4	8	800	301	1900
303	4	" "	" " "	.75	7	5	4	11.5	100	45	1899
304	1	Frank W. and A. R. Curtis	La Prele Cr.	4.5	10	7	2	3.5	3,000	645	1900
305	2	M. J. Jeffries	Little Goose Cr.						110	35	1899
306	2	Mary A. Wheeler	Red Water Cr.	.62	6.5	5	2–3	3	75	40	"
307	2	M. J. Whaley	French and Clear Crs.		12	8	4	75		170	"
308	2	W. E. Keys	Bear Run	4	2	1	1	8	200	30	1898
309	3	Alexander Roach	Grey Bull River	2.5	10	8	1	6	200	37	1899
310	3	Edith Hornickel	N. Fork Popo Agie River	1.5					75	65	"
311	3	C. S. Waln	Little Canon Cr.	2.5	6.5	6	1.5	5.2	100	83	"
312	3	David W. Hammer et al.	Grey Bull River	11	13	12	2	6	1,200	1393	"
313	1	Robert Gordon	N. Fork La Bonte Cr.	.5	6	5	1.5	6.5	300	105	1900
314	2	Winnie L. Keesee	Big Piney Cr.	1	5	4	1.5	6	1,000	123	1899
315	1	Charles N. Richards	Bates Cr.	3	8	6	2	5	600	359	"
316	4	Joseph L. Nield	Dry Cr.	3.5	4	3	1.5	15	20	80	"
317	2	L. E. Martin	Jackson Cr.	.12	2.5	2	1		15	1	"
318	1	M. C. Fitzmorris	Sybille Cr.	1.5	4	3.5	2	35	160	50	1898
319	4	H. C. Bone and S. Osterhout	North Piney Cr.	3.25	8	6	2	6.66	100	828	1899

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
320	4	Carl J. Berg	Black's Fork Cr.	7.33	8	3	3	8	$ 100	155	1900
321	4	Andrew Dalquist	" " "	7.33	8	3	3	8	75	70	"
322	3	Fred Herren et al.	Shell Cr.	5	10	8	1	5.28	400	294	1899
323	4	C. R. and I. E. Griggs	Middle Piney Cr.	1.75	7	6	1.5	50	200	282	"
324	4	L. E. Johnson	Black's Fork Cr.	7.33	8	3	3	8	50	55	"
325	1	Henry Trollope	Red Cr.	1.25	4	2	1.5	7	250	39	"
326	1	J. R. Slaughter and The Tolland Co.	Deer Cr.	3	7	5	1	4	500	300	1898
327	4	William J. Crook	Cottonwood Cr.	3	8	8	1.5	47	25	80	1899
328	2	George E. Moose	North Piney Cr.							70	"
329	1	George L. Foxton	Indian Cr.	.25	3	2	1	5	25	15	
330	1	H. F. Burch	Snake River	1	8	8	2	2		40	1898
331	4	Katherine K. Hill	Cottonwood Cr.	2	5	4	2	20	200	227	1899
332	4	James R. and O. R. Alexander	Cottonwood Cr.	1	10	8	2	10	200	256	1900
333	1	Tom Sun	N. Fk Grand Encampment	2.37	21	15	3	2.64	2,000	2240	
334	1	W. H. Thayer	Thayer Springs	.5	6	4	1	5.28	50	50	1900
335	1	John H. Lane	Willow Cr.	2.75	5	4	1	3.5	500	90	
336	3	James Davis	Grey Bull River	3	12	9	1.5	5	200	160	1899
337	3	Clarence Sirrine	Clark's Fork	2.75	16	10	3	6.66	1,000	115	"
338	2	Ghent and Champion	Red Fork Powder River	1.75	6	4	1	5.28	700	470	1900
339	4	Edgar N. Carter	Black's Fork Cr.	9	12.5	10.5	2.5	10	100	475.08	1901
340	4	Beckwith, Quinn & Co.	Twin Crs.	3	9	6	3	5	300	1355	"

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade, Feet per Mile			
					Top	Bot'm					
341	3	W. A. Blackstone	Grey Bull River	2	9	7	1.5	7	$ 200	100	1899
342	4	John W. Hatton	Mill Cr.	.5	4.5	3.5	1	3	100	100	"
343	2	Z. M. Grinnell	South Fork Piney Cr.	7	12	8	2	13.33	350	100	"
344	4	A. D. Ingersoll	Black's Fork Cr.	3.89	8	7	1.25	15	150	160	1900
345	4	Mary H. McGinnis	Spring Cr.		8	5	1.5	21	75	25	1899
346	2	Carrie Weltner	South Piney Cr.	9	8	4	2	5.28	1,500	150	"
347	2	Nettie M. Penn	Clear Cr.	1.75					250	50	"
348	1	Peter Paulson	Horseshoe Cr.	1.25	3.5	3.5	1.5	3.5		25	"
349	1	G. E. Gilmore	Willow Cr.	.25	4.5	3.5	.8	5	100	45	1898
350	1	" "	" "	.25	4	3	1	5	75	20	"
351	4	George A. Lunford	Dry Cr.	1.25	3.5	3.5	1	45	25	100	1901
352	4	David Porter	Stump Cr.	1.5	11	10	2	10	8	60	1899
353	4	Thomas Odel	Horse Cr.						300	277	"
354	4	Amos W. Smith	North Piney Cr.	4	10	8	1.5	5.28	500	410	1900
355	1	H. J. Dupes	Horseshoe Cr.	1	3	2.5	1	7	150	36	1899
356	1	Peter Paulson	" "	1.75	4	3.5	1.5	4.5	75	145	"
357	4	Adams & Hencks	Willow Cr.	1.5	8	8	3	17	25	205	"
358	1	Grand Encampment Mining and Milling Co.	Grand Encampment River	2.05	6	3	3	11.56			1901
359	2	Elizabeth Mumper	Piney Cr.	5.5		1.5	1	15	250	96	1899
360	2	W. Thompson	Big Goose Cr.	3	6	4	1		200	33	"
361	4	J. W. Haddenham	Trail Cr.	.75	4.5	4	1	10	60	75	1899

APPLICATIONS FOR ENLARGEMENT—*Continued.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
362	1	C. B. Sterrett	North Fork Brush Cr.	30	26	20	5	3	$ 25,000		*
363	1	C. F. Coffee	Rawhide Cr.	1.5					50		
364	1	Linna Madison	La Prele Cr.	3	8	6	1.5		500	320	*
365	1	John Jones	" " "							11	1899
366	3	Thomas C. Green	Wood River	1.5	8	6	1	8	200	70	"
367	1	Emil Jammerman	Sweetwater River	2.75	5	3	1	2.64	75	200	1900
368	1	Andrew H. Christensen	Snake River	10	14	8	3	4	7,500	987	"
369	2	Poole & Carpenter	Miller Cr.	2	4	3	1	6	150	131	"
370	4	Jens J. Condall	La Barge Cr.	7	20	15	2	2		160	1899
371	4	Mary J. Young	" " "	7	20	15	2	2		160	"
372	2	A. Frederickson	Amsden Cr.	1.25	2.5	2	.66	26.4		30	1898
373	1	Frank R. Schoen	Medicine Bow	3	6	4	2	4	200	140	1899
374	4	P. G. Wall et al	Smith's Fork Cr.	4.7	12	10	2	15	300	768	"
375	4	James A. Johnson	" " "	2.11	6	5	1	8	50	60	"
376	4	Benjamin Broadbent	Cedar Cr.	1.25	4.5	3.5	1.5	8	50	160	1900
377	4	Thomas Blyth	Bear River	1284 ft	3	2.5	1	12	100	26	1901
378	4	" "	" "	1	4	3	1.5	10	250	48	"
379	1	The Tolland Co.	Little Deer Cr.	5	9	6	2	4		315	1899
380	1	" " "	Deer Cr.	2.25	6	4	2	4		55	"
381	2	R. Cornwall	Big Goose Cr.	17	9	5	2	16	200	40	"
382	2	" "	Little Goose Cr.	16	17	10	3.5	5.28		35	"
383	4	Mary A. DeGraw	La Barge Cr.						75	30	"

*Not approved.

APPLICATIONS FOR ENLARGEMENT—*Concluded.*

Permit No.	Division No.	NAME OF APPLICANT	SOURCE OF APPROPRIATION	Dimensions					Estimated Cost	No. of Acres	Date for Completion
				Length in Miles	Width		Depth	Grade Feet per Mile			
					Top	Bot'm					
384	1	C. W. Burdick	North Platte River.	4.08	5	3	1.5	3	$ 1,000	500	1900
385	4	Laban Heward.	Slough of Bear River . . .	1.5	5	4	1	5.28	100	66	"
386	3	Joseph Vogel.	S. Fork Shoshone River. .	2.5	4	3	1	8	275	40	"
387	4	Dovie Angus and Mary C. Beck	South Piney Cr.		10	8	1.5	6.66	200	440	1901

TABLE

GIVING CERTIFICATES OF APPROPRIATION OF WATER ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOV. 30, 1896, AND NOV. 30, 1898.

WATER DIVISION NO. 1.

NORTH SPRING CREEK—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
42	Cherokee Ditch	Alexander McPhail	264	June 18, '91	Irrigation	5.71	400
42	" "	James Dugan	266	"	"	3.36	235
42	" "	S. L. Rhodes	268	"	"	2.07	145

HAWK SPRINGS, Tributary of Horse Creek—Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Hawk Springs	Wm. Sturgis, Jr.	272	May 15 '93	Irrigation	8.57	600

LITTLE LARAMIE RIVER—Albany County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
131	Hunton No. 1	Elizabeth A. Hunton.........	270	May 9 '93	Irrigation	2.28	160
3	Judson-Sutphin Dam and Water Ditches Nos. 4, 5, 6, 7 and 8 ...	Judson, Sutphin & Co	284	Apr. 16 to May 29 '74	"	7.43	520
5	Judson-Sutphin Dam and Water Ditches Nos. 1, 2, 3 and 9......	" " "	"	Apr. 10 to May 5, '75	"	7.14	500
121	McCall & Bird	Wm. T. Bird...............	"	Apr. 8 '89	"	7.43	520
136	Jones Ditch No. 2........	C. H. Jones................	358	Aug. 3 '96	"	.57	40
131	Pollock & Boggs	H. W. Pollock	364	Spring '94	"	2.29	160
131	" "	Alexander Boggs	"	"	"	2.29	160
	Barkley	R. F. Hecht................	424	July 16 '94	"	.71	50
	Beaver	" "	"	"	"	.14	10
	Reid Extension..........	John Reid	"	Feb. 21 '96	"	7.42	520

PASS CREEK—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
46	U. L. Ditch	Frank C. Griffin............	274	Nov. 3 '93	Irrigation	2.29	160

COOPER CREEK AND TRIBUTARIES—Albany County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Judson Sutphin & Co. No. 7	Judson, Sutphin & Co.	282	June 1 '81	Irrigation	10.57	740
2	" " " No. 4	" " "	"	April 17 '82	"	1.5	105
3	" " " No. 2	" " "	"	April 20 '83	"	.14	10
4	" " " No. 3	" " "	"	April 23 '83	"	.07	5
5	" " " No. 5	" " "	"	April 25 '83	"	.14	10
6	C. N. Northrop No. 1	C. N. Northrop	"	April 15 '84	"	1.43	100
7	" " No. 2	" "	"	May 1 '84	"	4.28	300
8	" " No. 3	" "	"	June 1 '84	"	13.71	960
9	" " No. 4	" "	"	June 15 '84	"	4.28	300
10	E. L. Dixon Nos. 1. 2. 3, 4	E. L. Dixon	"	Mar. 15 '86	"	8.56	600
11	Judson Sutphin & Co. No. 1	Judson, Sutphin & Co.	"	May 1 '86	"	.57	40
12	" " " No. 6	" " "	"	"	"	.28	20
13	Northrop No. 5	C. N. Northrop	"	Spring '88	"	12.14	850
14	" No. 6	" "	"	"	"	1.43	100
15	" No. 7	" "	"	"	"	1.43	100

DUTTON CREEK—Carbon County.

1	Baxter Ditch No. 1	J. W. Connor, adm. Alsop estate	286	Summer '78	Irrigation	9.14	640
2	Alsop Ditches Nos. 2 and 3	" " " " "	"	Spring '79	"	6.71	400

Dutton Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	Alsop Ditch No. 4	J. W. Connor, adm. Alsop estate	286	Spring '80	Irrigation	1.14	80
4	" " No. 5	" " " " "	"	"	"	2.28	160
5	Beach No. 2 Water Ditch	W. C. Clarke Thornhill......	"	Apr. 10 '84	"	2.85	200
6	Two Mile Ditch..........	Judson, Sutphin & Co........	"	June 1 '84	"	11.43	80
7	Dutton Creek Water Ditch	" " "	"	"	"	50.29	3520
8	Thornhill Ditch..........	W. C. Clarke Thornhill......	"	Mar. 29 '89	Irr., stock, dom.	7.25	

MEDICINE BOW RIVER AND TRIBUTARIES—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pipe line and pump at Medicine Bow Station ..	The U. P. Railway Co........	336	1868	Railway, power, domestic	.31	
2	Schoen's Domestic.......	Frank R. Schoen...........	"	Spring '71	Domestic, fish pond, irrigation	.60	40
3	Boison.................	Caroline Boison	"	1873	Irrigation	.71	53
4	Vagner	C. L. Vagner and L. R. Meyer	"	1874	"	3.21	225
5	Hansen No. 1	Neils Hanson................	"	June '75	Irrigation, dom.	2.55	175
6	Island	" "	"	June '75	" "	1.55	105
6	Natic..................	Richard Brackenbury	"	July 15 '77	Irrigation	2.00	140
7	Connor No. 1	John W. Connor..........	"	October '78	Stock water, irr.	3.45	240
8	" No. 4	" "	"	March '79	" "	6.45	450
8	" No. 5	" "	"	"	" "	1.45	100

Medicine Bow—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
9	Ellis No. 2	David Ellis	336	April '79	Irrigation	.21	15
10	Johnson No. 5	S. W. Johnson	"	May 1879	"	.21	15
11	" No. 4	" "	"	Apr. 25 '80	"	.79	55
12	Ellis No. 1	David Ellis	"	May 1 '81	"	.21	15
13	Hammond Nos. 1 and 2	Lewis Hammond	"	Spring '81	Domestic, irr.	1.05	70
14	Schoen East Side	Frank R. Schoen	"	April '82	Irrigation	2.14	150
15	Vagner, 2nd appropriation	C. L. Vagner and L. R. Meyer	"	June 30 '82	"	1.71	120
16	Herman No. 4	Frederick Herman	"	July 15 '82	"	.05	1.5
17	" No. 3	" "	"	Apr. 1 '83	Domestic, irr.	.25	15
17	" No. 2	" "	"	"	Irrigation	.71	50
18	Brackenbury No. 3	Richard Brackenbury	"	May 5 '83	"	1.43	100
19	Richardson	William Richardson	"	May '83	Domestic, irr.	2.75	190
19	Highland	" "	"	May '83	Irrigation	6.14	430
19	"	Robert Pallister	"	May '83	Domestic, stock, irrigation	5.75	400
20	Alpha	Magnus Johnson and Henry Edfors	"	Spring '84	Domestic, stock, irrigation	2.30	160
20	"	Charles H. Nichol	"	"	Domestic, stock, irrigation	1.30	90
21	Quealy	S. W. Johnson	"	Mar. 25 '85	Irrigation	1.71	120
22	Hadsell	A. B. Conaway	"	May 15 '85	"	2.71	190
23	Alpha	Nelson Sargent	"	Spring '85	"	2.28	160

Medicine Bow—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
24	Allison	John Allison	336	June 15 '85	Domestic, irr.	.38	25
25	Morey	William Richardson	"	Aug. 19 '85	Irrigation	.67	47
26	Allison No. 1	John Allison	"	May 15 '86	"	1.21	85
27	Garden	A. B. Conaway	"	June 1 '86	"	1.14	80
28	Potato Creek	" "	"	June 10 '86	"	.43	30
29	Schoen's Domestic, 2nd appropriation	Frank R. Schoen	338	Season of '86	Domestic, fish pond, irrigation	.68	45
30	Ellis No. 3	David Ellis	"	Apr. 25 '87	Irrigation	.57	40
31	Brackenbury No. 1	Richard Brackenbury	"	May 1 '87	"	.78	55
31	" No. 2	" "	"	"	"	1.47	103
31	Hee Ditch	Horne Bros	"	"	"	2.14	150
32	Herman No. 1	Frederick Herman	"	May 1887	"	.21	15
33	Hammond No. 3	Lewis Hammond	"	Spring '87	"	.28	20
34	Success	Jonathan Veitch	"	Oct. 14 '87	Domestic, irr.	1.66	115
35	" 2nd appropriation	Joseph Widdowfield	"	Fall '87	Irrigation	4.57	320
36	Rasmussen	J. M. Monroe	"	Apr. 17 '88	"	4.57	320
37	Hee	Peter Kamp	"	May 10 '88	"	.21	15
38	Conway & Schoen	Frank R. Schoen	"	June 1889	"	2.28	160
39	Connor No. 3	John W. Connor	"	Feb. 1890	Stock, irrigation	4.30	300
40	Haglund	Erick and Hans Haglund	"	July 1890	Irrigation	2.28	160
41	Morey, 2nd appropriation	William Richardson	"	Apr. 24 '91	"	4.91	344
42	Johnson No. 3	S. W. Johnson	"	July 28 '91	"	.43	30

Medicine Bow—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
43	West Timber	S. W. Johnson	338	Apr. 24 '93	Domestic, irr.	3.15	220
44	Cheesbrough	Edward Cheesbrough	"	Aug. 31 '93	" "	5.45	380
44	"	Alfred Cheesbrough	"	"	Dom., stock, irr.	2.30	160
45	Widdowfield & Wolf	Joseph Widdowfield	"	Dec. 19 '93	Irrigation	3.43	240
45	" "	Stephen Wolf	"	"	"	3.43	240
46	Haglund, 2nd app'n	Erick and Hans Haglund	"	Sept. 2 '95	"	2.57	180

TROUBLESOME CREEK, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Watkins	John and Joseph Watkins	338	May 10 '85	Irrigation	.86	60
2	Lee Nos. 1 and 2	Griff Griffith	"	June 15 '85	Domestic, irr.	1.80	125
3	Gust Nelson	Gust. Nelson	"	Spring '87	Irrigation	5.80	405

DIFFICULTY CREEK, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Amos	Nathan Amos	338	1882	Irrigation	.79	55

NORTH FORK LITTLE MEDICINE—Albany County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	A. W. Boles	A. W. Boles	340	May 1888	Irrigation	.57	40

LITTLE MEDICINE BOW RIVER—Albany and Carbon Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Chas. Fauver	Charles A. Fauver	340	Apr. 1 '86	Dom., stock, irr.	1.05	70
2	Deselm	Albert Deselm.............	"	May 1886	Irrigation	.50	35
3	Dyer, south	Kirk Dyer	"	Apr. 15 '87	"	.77	54
4	" main	" "	"	May 15 '87	"	2.14	150
5	Deselm No. 1............	Albert Deselm...............	"	May 1887	"	.64	45
6	Sieverts & Stocks	Fred L. Stocks	"	Aug. 10 '87	"	.86	60
6	" "	Carl Sieverts	"	"	"	1.21	85
7	Dyer & Fauver...........	Charles A. Fauver...........	"	Apr. 1 '88	"	1.00	70
7	" "	C. A. Monroe	"	"	"	.28	20
8	Dyer's Upper............	Kirk Dyer	"	May 15 '84	"	.57	40
9	Wrager.................	George W. Wrager..........	"	May 3 '89	Dom., stock, irr.	.50	33
10	North Monroe...........	C. A. Monroe	"	May 1889	Irrigation	.18	13

BOBERG CREEK, Tributary of Muddy Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Cardwell Nos. 1 and 2....	Henry Cardwell.............	340	April '85	Irrigation	2.28	160

SULLIVAN CREEK, Tributary of Muddy Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Sullivan Nos. 2 and 3	J. J. Sullivan	340	May 1 '86	Irrigation	1.21	85
1	" No. 4	" "	"	"	"	.35	25
1	" Spring Creek....	" "	"	"	"	9.54	668

Rock Creek, Tributary of Medicine Bow—Albany and Carbon Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pipe line and pump at Rock Creek Station....	U. P. Railway Co...........	340	1868	Railway, power, domestic	.23	
2	Lower Currier Field.....	Frank O. Harrison...........	"	Spring '78	Irrigation	2.86	260
3	Harrison 7L Big Field....	Frank Cooper...............	"	Spring '82	"	5.07	355
3	Twelve, or Bluff.........	" "	"	"	"	3.43	240
3	Currier Upper Field No. 7	" "	"	"	"	.57	40
4	Upper Heart No. 2.......	" "	"	Spring '83	"	1.14	80
4	" " No. 1.......	" "	"	"	"	2.86	200
5	Brown No. 2............	" "	"	Summer '83	"	.71	50
6	" No. 1............	" "	342	Fall '83	"	3.78	265
6	Second Bottom..........	Frank O. Harrison...........	"	Fall '83	"	6.14	430
7	Williams...............	William A. Williams........	"	Used '84	"	.85	60
8	Currier Upper Field No. 4	Frank O. Harrison...........	"	Spring '84	"	.71	50
8	Upper Currier No. 1......	" " "	"	"	"	3.14	220
9	Thornton...............	Edgar H. Thornton..........	"	May 1 '85	Stock, irrigation	12.00	800
10	Harrison 7L, Sec. 3......	Frank Cooper...............	"	Spring '85	Irrigation	6.28	440
11	Big Heart..............	" "	"	Summer '85	"	27.57	1930
10	Currier Upper Field No. 3	Frank O. Harrison...........	"	Spring '85	"	1.57	110
10	Harrison, Big...........	" " "	"	"	"	29.00	2030
12	Bluff Water.............	Edgar H. Thornton..........	"	Sept. 1 '85	Stock, irrigation	12.75	860
13	Harrison No. 4..........	Peter P. Rynders...........	"	May 15 '86	Irrigation	1.14	80
14	Hebler & Murray No. 4..	Hebler & Murray............	"	Spring '86	"	1.43	100

Rock Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
15	Taylor	William Taylor	342	Jan. 1887	Irrigation	12.14	850
16	Hebler & Murray Upper No. 1	Hebler & Murray	344	Spring '87	"	14.71	1030
17	John Cullom	John Cullom	"	May 1 '88	"	1.71	120
17	Skunk Run	J. F. Dixon	"	"	"	.57	40
18	Hebler & Murray No. 2	Hebler & Murray	"	Spring '88	"	1.85	130
18	" " No. 3	" " "	"	"	"	6.15	430
19	Upper Dry Creek	Alvy Dixon	"	June 12 '88	"	2.14	150
20	" " "	H. J. Martin	"	August '88	"	.85	60
21	Schulte	Frederick, Anna M., Laura, Mrs. Charlotte and Abraham Schulte	"	Feb. '89	"	10.28	720
22	Martin's East Side	H. J. Martin	"	Apr. 15 '89	"	1.00	70
23	Harrison No. 6	Frank Cooper	"	Spring '88	Stock, irrigation	2.10	140
24	Spring Creek	M. H. Dixon	"	June 15 '89	Irrigation	2.71	190
25	Phelan	Charles J. Phelan	"	May 10 '90	"	1.57	110
26	Dixon Extension Canon	M. H. Dixon	"	May 15 '90	"	1.71	120
27	Currier Upper Field No. 5	Frank O. Harrison	"	Spring '90	"	2.14	150
27	" " " No. 6	" " "	"	"	"	1.14	80
28	Canon	William A. Williams	"	Season '91	"	1.43	100
29	Island No. 3	Frank O. Harrison	"	Apr. 29 '92	"	1.57	110
36	Strode	Frank Cooper	355	Mar. 3 '97	"	3.43	240

One Mile Creek, Tributary of Rock Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Island No. 2	Frank Cooper	344	Spring '81	Irrigation	2.71	190
1	Island No. 1	" "	"	"	"	1.71	120
2	Ryberg	Lawrence Ryberg	"	June '88	"	.71	50

Three Mile Creek, Tributary of Rock Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Combination	Frank Cooper	344	Spring '82	Irrigation	4.35	305
2	Lower Heart No. 1	" "	"	Spring '83	"	2.93	205
3	Upper Heart No. 3	" "	"	Spring '84	"	1.43	100
3	7 L. No. 2	" "	"	"	"	4.43	310
4	Lower Heart No. 2	" "	346	Spring '85	"	4.07	285
5	Smith No. 3	Mary Ivenson	"	May 10 '86	"	1.14	80
6	Fisher Field No. 2, 7 L.	Frank Cooper	"	Spring '86	"	.43	30
7	Smith No. 2	Mary Ivenson	"	May 1 '87	"	.28	20
8	Smith No. 1	" "	"	Apr. 15 '87	"	.28	20
9	Fleck No. 2	Duty Fleck	"	Apr. 8 '88	"	.57	40
9	Fleck Nos. 1 and 4	" "	"	"	"	1.43	100
10	Fleck No. 3	" "	"	June 11 '90	"	.28	20
11	7 L. Fisher Field No. 1	Frank Cooper	"	May 1 '91	Stock, irrigation	3.40	225

WATKINS CREEK, Tributary of Rock Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Harrison's Upper Watkins Creek No. 1..........	Frank O. Harrison..........	346	Spring '85	Irrigation	3.43	240
2	7 L. N. W. ¼, Section 3..	Frank Cooper	"	Spring '89	"	2.28	160

FOOTE CREEK, Tributary of Rock Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Williams No. 1..........	E. A. Harnden	346	May 1 '85	Irrigation	8.85	620

SPRING CREEK, Tributary of Rock Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Williams No. 2..........	E. A. Harnden	346	May 1 '85	Irrigation	.28	20

SPRING, Tributary of Rock Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pipe line and pump at Aurora Station.........	U. P. Railway Co............	346	1870	Railway, power domestic	.23	

WAGON HOUND CREEK, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Vagner No. 2	C. L. Vagner and L. R. Meyer	346	1878	Irrigation	.36	25
2	Vagner & Meyer	" " " " "	"	Summer '84	"	3.93	275
3	Spring	Joseph O. Yeakey	"	Season '86	"	.36	25
4	Toms	N. O. Johnson and A. Oleson	"	Built in '86	"	1.14	80
5	Rose Owen No. 1	Owen estate (Dora McAllister, agent)	"	June '89	"	1.14	80
6	Rose Owen No. 2	Owen estate (Dora McAllister, agent)	"	Season '90	"	.15	10
7	Johnson & Oleson	N. O. Johnson and A. Oleson	"	Oct. 26 '93	Domestic, irr.	2.90	200

WEST FORK WAGON HOUND OR BEAR CREEK—Carbon County.

1	Heward No. 1	Joseph Heward	346	May 5 '90	Dom., stock, irr.	1.20	80
1	Heward No. 3	" "	"	"	Domestic, irr.	1.20	80

MULE CREEK, Tributary of Wagon Hound Creek—Carbon County.

1	Heward	Joseph Heward	348	May 10 '90	Irrigation	2.71	190

Spring Creek, Tributary of Wagon Hound—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Johnson & Oleson	N. O. Johnson and A. Oleson.	348	Prior to '91	Irrigation	.86	60

Halleck Creek, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Quealey No. 1...........	Michael Quealey.............	348	1866	Domestic, irr.	21.45	1500
1	Quealey No. 2...........	" "	"	"	" "	11.16	780
1	Quealey No. 3...........	" "	"	"	Irrigation	9.71	680
1	Quealey No. 4...........	" "	"	"	"	1.43	100
1	Quealey No. 5...........	" "	"	"	"	4.85	340

Halleck Creek No. 4, Tributary of Halleck Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Moerke.................	Gust Siltamaki..............	348	May 1 '87	Irrigation	1.28	90
2	Bangs No. 3............	William Bangs..............	"	Oct. 15 '87	"	.21	15

Mill Creek, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Jack No. 6..............	Robert Jack.................	348	Spring '79	Irrigation	1.71	120
1	Jack No. 7..............	" "	"	Spring '79	"	.86	60
2	Sheffield, Sr............	Peter Sheffield...............	"	June '82	Domestic, irr.	1.65	115

Mill Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	Sheffield, Jr.	Hester Sheffield	348	April '83	Domestic, irr.	1.70	115
4	Sederlin No. 2	Louis Sederlin	"	June 10 '83	Irrigation	1.43	100
5	Sederlin No. 1	" "	"	May '84	Domestic, irr.	.88	60
6	Larsen	Hans Larsen	"	May 20 '87	Irrigation	.86	60
7	Hamilton	Louis Sederlin	"	Aug. 19 '89	"	.61	43
8	Sederlin No. 1, 2nd app'n.	Louis Sederlin	"	Season '90	Domestic, irr.	1.70	118
9	Sederlin No. 3	" "	"	Sept. 28 '95	Irrigation	.28	20

U. L. Creek, Tributary of Mill Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Jack Nos. 1 and 4	Robert Jack	348	April '79	Stock, dom'stic, irr.	5.90	410
2	Jack No. 2	" "	350	Spring '79	Irrigation	.79	55
2	Jack No. 3	" "	"	Spring '79	"	.79	55
2	Jack No. 5	" "	"	Spring '79	"	1.57	110

Johnson Creek, Tributary of Mill Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Johnson No. 3	David West	350	May 1 '80	Irrigation	2.38	167
2	Jones Nos. 1 and 2	Michael Quealey	"	Before '84	"	.86	60
3	Bangs Creek	William Bangs	"	June '87	"	.15	10

FISH CREEK, Tributary of Mill Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Jack	Robert Jack	350	Spring '79	Irrigation	1.28	90

BRIDGER CREEK, Tributary of Mill Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Dolling No. 1	John Dolling	350	April 4 '85	Irrigation	2.28	160
1	Dolling No. 2	" "	"	April 4 '85	"	1.14	80

MIKE HAWLEY CREEK, Tributary of Mill Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Mike Hawley Creek	William Bangs	350	April '87	Irrigation	.28	20

SPRING CREEK, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Spring Creek	Joseph Widdowfield	350	Spring '82	Dom., stock, irr.	.90	60
2	Sublet	John Sublet	"	Season '84	Irrigation	.21	15

O'MERA CEERK, Tributary of Medicine Bow—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Eli Nos. 1 and 2	John T. Eli	350	Spring '86	Irrigation	.43	30

BATES CREEK—Natrona County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
25	Ex. North Side Ditch....	Fred E. Place	356	Sept. 29 '93	Irrigation	1.43	100
JACK CREEK—Carbon County.							
20	South Side.............	G. F. Forney...............	360	Mar. 22 '92	Irrigation	3.43	240
MUDDY CREEK—Natrona County.							
31	Wagoner	George J. Wagoner..........	400	June 2 '93	Irrigation	.57	40
40	Gonsalves	Verissimo Gonsalves.........	"	June 19 '91	"	.85	60
22½	O. K..................	Smith & Milne	"	April 23 '91	"	1.78	125
CORRAL CREEK, Tributary of Bates Creek—Natrona County.							
24	B. G..................	George S. Martin	400	Mar. 28 '92	Irrigation	.12	8.5
24	Box Elder..............	" " "	"	Mar. 28 '92	"	.14	10
24	Meadow................	" " "	"	Mar. 28 '92	"	.14	10
24	High Line	" " "	"	Mar. 28 '92	"	.57	40

CLEAR FORK MUDDY CREEK—Natrona County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
37	Canon	W. W. Mosteller	400	Nov. 26 '94	Irrigation	.52	37

HORSE SHOE CREEK—Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
27	Wellman & Dupes	H. J. Dupes	400	April 14 '91	Irrigation	.47	33
36	Hoffman No. 1	Joseph E. Hoffman	"	Oct. 25 '93	"	1.18	83
31	Dupes & Skolinski	Antoine Skolinski	"	Nov. 17 '92	"	1.21	85
30	P. J. Hall No. 2	P. J. Hall	"	Nov. 17 '92	"	.50	35
	Torval Torgerson No. 1	Torval Torgerson	424	Nov. 29 '92	"	.40	28

MILL CREEK, Tributary of Little Laramie—Albany County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
134	Dallas	Joseph Dallas	400	April 27 '94	Irrigation	1.71	120
136	Albert Webb	Albert Webb	"	April 22 '96	"	2.11	148.28
	Dallas & Webb	Jos. Dallas and Albert Webb	"	May 2 '95	"	6.41	449

COTTONWOOD CREEK—Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority		Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Prager Ditch	J. M. Rutherford	434	Season	'73	Irrigation	.04	3
2	Shaw No. 1	Thomas A. Shaw	"	Fall	'79	"	.70	50
3	Cottonwood	Matilda J. Newman	"	March	'85	"	2.64	185
3	"	Martha J. Lyon	"	March	'85	"	.57	40
4	Turpen No. 2	Bryant Turpen	"	July 3	'85	"	.23	16
5	Hubert	William C. Fletchar	"	Oct.	'85	"	.64	45
5	"	Catherine Reitz	"	Oct.	'85	"	.07	5
6	Herman	William Herman	435	Fall	'85	"	.93	65
7	Kenny No. 1	William Kenney	"	June	'86	"	1.31	92
7	Kenny No. 2	" "	"	June	'86	"	.24	17
8	St. Dennis	William C. Hopkins	"	Season	'86	"	.35	25
8	" "	Edward Held	"	Season	'86	"	.60	42
9	Miller No. 1	Miller Bros.	"	Sept. 30	'86	"	.93	65
10	Hay	Peter McFarlane	"	Dec. 10	'86	"	2.04	143
11	Wright No. 2	George S. Adams	"	May	'87	"	1.14	80
12	Binford No. 1	George H. Binford	"	Nov.	'87	"	.70	50
12	Binford No. 2	" " "	"	Nov.	'87	"	.21	15
13	Center	J. M. Rutherford	"	May 15	'88	"	.11	8
14	Shaw No. 2	Thomas A. Shaw	"	May	'88	"	.25	18
14	McCullough No. 1	C. H. McCullough	"	May	'88	"	.21	15
15	Turpen No. 1	Bryant Turpen	"	Season	'88	"	.48	33
16	Coleman	Mary Coleman	"	March 20	'89	"	.21	15
17	Bardill No. 1	Conrad Bardill	"	April	'89	"	.54	38

Cottonwood Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
18	Shaw No. 3	Thomas A. Shaw	435	August '89	Irrigation	.33	23
18	Shaw No. 3	George H. Binford	"	August '89	"	.29	20
19	Hubert	W. F. Coleman	"	Season '89	"	1.00	70
19	McCullough No. 2	C. H. McCullough	436	Season '89	"	.57	40
20	Ireland	A. H. Ireland	"	Spring '90	"	.50	35
21	Wright No. 1	George S. Adams	"	Fall '92	"	.37	26
22	Prager, 2nd appropriation	J. M. Rutherford	"	Season '93	"	.10	7
22	Center, 2nd appropriation.	" "	"	Season '93	"	.15	10
23	Bardill No. 2	Conrad Bardill	"	May 18 '98	"	.20	14

ELKHORN CREEK—Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Elkhorn No. 1	John Moran	*	1886	"	1.44	101
1	Elkhorn No. 2	" "		"	"	.35	24
1	Elkhorn No. 3	" "		"	"	.90	62
2	Foxton No. 3	F. W. Foxton		Oct. 25 '94	"	1.07	75
2	Foxton No. 4	" "		Oct. 25 '94	"	.46	32
3	Foxton No. 2	" "		Dec. 21 '96	"	.50	35

NORTH ELKHORN CREEK, Tributary of Elkhorn Creek—Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Weaklen	R. S. Weaklen	*	1888	Irrigation	1.07	75

* Not yet recorded.

LA PRELE CREEK—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Powell No. 1	George Powell	*	1878	Irrigation	1.60	112
2	Kennedy	J. H. Kennedy		April 1 '79	“	.71	50
3	P. George	Peter George		May '79	“	.83	58
3	P. George	C. H. George		May '79	“	.66	46
4	Arrowsmith No. 1	Harvey P. Allen		1880	“	.81	57
4	Arrowsmith No. 1	Fred W. Curtis		“	“	.44	31
4	Metz	Louis Metz		“	“	.15	10
4	Metz	G. W. Heckethorn		“	“	.08	5
5	Smith	Mrs. Nancy M. Smith		July 1 '82	Stock, irrigation	.75	50
6	Fritts	Andrew Jackson		1882	Irrigation	.17	12
7	Bishop	Spencer A. Bishop		Nov. '83	Domestic, irr.	.80	55
8	Powell & Ayers	James Powell		April 1 '84	Dom., stock, irr.	1.10	75
8	Powell & Ayers	Alvah Ayers		April 1 '84	Stock, irrigation	1.55	105
9	La Prele Ditch Co. No. 1	J. H. Kennedy		April '85	Irrigation	2.64	185
10	Crazy Horse	“ “		May '85	“	.86	60
10	Crazy Horse	Dennis W. Leman		May '85	“	.36	25
10	Crazy Horse	Charles W. Horr		May '85	“	.43	30
11	Fetterman	E. E. Pirot		1885	Domestic, irr.	1.30	90
11	Fetterman	Charles Williams		“	Irrigation	.36	25
12	Arrowsmith No. 2	Harvey P. Allen		Spring '86	“	.36	25
12	Curtis Extension Arrowsmith No. 2	Fred W. Curtis		Spring '86	Stock, irrigation	.76	53

* Not yet recorded.

La Prele Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
12	Arrowsmith No. 2	Fred W. Curtis	*	Spring '86	Stock, irrigation	.81	56
13	Powell	Henry L. Brenning		June '86	Irrigation	3.21	225
13	Powell	George Powell		June '86	"	4.10	287
13	Powell	Alvah W. Ayers		June '86	Domestic, irr.	.71	50
14	Jones Cross Two	John Jones		March '87	Irrigation	1.00	70
15	O'Brien, Wallace & Elder	Albert Elder		May '87	"	1.34	94
15	O'Brien, Wallace & Elder	Ed. Schloss		May '87	"	.17	12
15	O'Brien, Wallace & Elder	John D. O'Brien		May '87	"	.61	43
16	Phil. Housiaux	William C. Sullivan		Spring '87	"	.30	20
16	Hermit Rock Valley	John Jones		"	"	.13	9
17	Jones & Horr	John Jones		Fall '87	"	.30	20
18	Moss Agate	Charles W. Horr		Dec. 1 '87	"	.43	30
19	Hermit Rock Valley	George H. Cross		Dec. 12 '87	"	1.79	125
20	Powell & Wheelock	W. H. Powell		1887	"	1.57	110
21	Jones Cross Two	John Jones		Nov. '88	"	.43	30
22	Fritts, 2nd appropriation	Andrew Jackson		Season '88	"	1.18	83
23	Jones & Horr	Charles W. Horr		April 1 '89	"	.15	10
24	Housiaux	John Housiaux		May 1889	"	.30	21
24	Housiaux	Albert Urban		" "	"	.50	34
25	Lambe No. 1	George I. Lambe		Fall '89	Irr., stock, dom.	.65	44
25	Lambe No. 2	" " "		Fall '89	Irrigation	.08	6
25	Table Mountain	Nancy M. Smith		Fall '89	"	.26	18

* Not yet recorded.

La Prele Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
26	Smith, 2nd appropriation.	Nancy M. Smith............	*	1889	Stock, irrigation	.75	50
26	Wheelock Extension and Powell & Wheelock....	Benjamin C. Wheelock.......		1889	Irrigation	.86	60
27	Hermit Rock Valley......	George Levasseur...........		Spring '90	"	.31	22
28	Table Mountain..........	Henry W. Kellogg..........		June 25 '90	"	.41	29
28	Table Mountain..........	Spencer A. Bishop..........		"	"	.30	20
29	Fryer	Robert Fryer...............		1890	"	.53	37
30	Brooks' Ex. Table M'ntain	Orrin D. Brooks............		May 2 '91	"	.86	60
30	Brooks' Ex. Table M'ntain	W. E. Brooks		"	Stock, irrigation	1.27	88
30	Brooks' Ex. Table M'ntain	Ward Brooks................		"	" "	.60	40
31	Leman	Dennis W. Leman...........		May 14 '91	Irrigation	.36	25
32	La Prele High Line......	George I. Lambe............		May 15 '92	"	.51	36
33	Crazy Horse............	Frank Gore		Mar. 31 '92	"	.86	60
34	Tobin & O'Brien.........	Patrick Tobin		Nov. 14 '92	"	.46	32
34	Tobin & O'Brien.........	Thomas O'Brien............		"	"	.43	30
35	Fetterman..............	L. W. Clelland.............		June 7 '94	"	1.41	99
36	La Prele High Line......	George I. Lambe............		Sept. 25 '94	"	1.07	75

MOSS AGATE CREEK, Tributary of La Prele Creek—Converse County.

1	Moss Agate..............	George Levasseur...........	*	Apr. 12 '92	Irrigation	.02	1

* Not yet recorded.

BEAVER CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Rice No. 1	Charles Rice	*	Spring '82	Irrigation	.47	33
2	Leman & Rice	" "		Spring '83	"	.63	44
3	W. Howard No. 2	William Howard		Season of '83	"	.21	15
4	Leman No. 1	Dennis W. Leman		Apr. '85	"	.43	30
5	Rice No. 2	Charles Rice		Feb. '87	"	.21	15
6	Bunn	E. Bunn		May '87	"	.40	28
7	Howard No. 1	William Howard		Spring '88	"	.40	28

RED CANON CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Howard No. 2	Anna Howard	*	Apr. '83	Irrigation	.74	52
2	North Red Canon	George H. Cross		Mar. '85	"	.87	61
3	Howard No. 1	Anna Howard		May '87	"	.40	27
4	South Red Canon	George H. Cross		Nov. '87	"	.40	27

BUCKSHOT CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Buckshot Nos. 1, 2, 3	Samuel Slaymaker	*	Oct. 1 '86	Dom., stock, irr.	.81	55

* Not yet recorded.

DEADWOOD CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	La Prele Ditch Co. No. 2	J. H. Kennedy	*	Apr. '85	Irrigation	.64	45
2	Seepage	Charles W. Horr		May 19 '86	"	.30	20
2	Procter No. 1	" " "		"	"	.57	40
2	Procter No. 2	" " "		"	"	.15	10
2	Procter No. 3	" " "		"	"	.02	1

WOLF CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Wolf Creek	John Housiaux	*	1886	Irrigation	.10	7

BLUE NOSE CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Brockway No. 1	Amzi W. Boles	*	Spring '87	Irrigation	.05	3
1	Brockway No. 1	George I. Lambe		"	"	.47	33

LITTLE LA PRELE CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Brockway No. 2	Amzi W. Boles	*	Spring '87	Irrigation	.53	37
2	Brockway No. 3	George I. Lambe		1888	"	.08	5

* Not yet recorded.

HARRIS CREEK, Tributary of La Prele Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Harris Creek	Fred W. Curtis	*	Apr. '89	Stock, irrigation	.43	30

SPRING, Tributary of Beaver Creek—Converse County.

1	Spring	Charles Rice	*	Spring '81	Fish pond, irr.	.05	3

SPRING, Tributary of Beaver Creek—Converse County.

1	Spring No. 1	William Howard	*	1884	Irrigation	.09	6
2	Spring No. 2	" "		Spring '87	"	.15	10

LA BONTE CREEK—Converse County.

1	La Bonte Road Ranch No. 1	Pollard & Co.	*	June 1 '83	Dom., stock, irr.	2.90	200
2	" " " No. 2	" "		Dec. 8 '84	Dom., stock, irr.	.60	40
3	Darlington	Darlington Ditch Co.		Oct. '85	Irrigation	9.21	645
4	"	Dwight H. Cole		Spring '86	"	.70	50
5	Patterson, West Side	Taylor Patterson		May 1 '87	"	.57	40
6	Goodwin No. 1	Geo. F. Goodwin		May '87	"	.93	65
6	" No. 2	" "		May '87	"	.24	17

* Not yet recorded.

La Bonte Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
7	Patterson, East Side......	Taylor Patterson............	*	Season '89	Irrigation	.70	50
8	Kern...................	John Kern................		Oct. '89	“	.64	45
9	La Bonte Road Ranch No. 2	William and Daniel Schofield		1890	“	.36	25
9	La Bonte Canon.........	W. S. Hamilton............		“	“	2.76	193½
10	Deerhead..............	Martin Gross..............		Sept. 16 '91	“	.71	50
10	“	Wm. Schofield.............		“	Stock, irrigation	.75	48
11	Guthrie & George........	Wagon Hound Ditch Co.....		Aug. 4 '92	Irrigation	.15	10
12	Cole..................	Dwight H. Cole............		Sept. 21 '97	“	.36	25

West Fork La Bonte Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Wagon Hound No. 1.....	Wagon Hound Ditch Co.....	*	March '84	Irrigation	10.71	750
2	Guthrie................	“ “ “ “		Spring '84	“	.57	40
3	Table..................	Robert Gordon.............		Apr. 1 '90	“	.90	63
4	Canon..................	Antoine Loubere...........		Aug. 5 '90	“	.66	46
5	Red Glade..............	Robert Gordon.............		Feb. 12 '98	“	.77	54

Mill Creek, Tributary of La Bonte Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	John Foxton No. 1......	John Foxton...............	*	Spring '85	Dom., stock, irr.	.43	30
2	“ “ No. 2......	“ “		Spring '86	Irrigation	.30	21

* Not yet recorded.

Mill Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	H. H. Foxton No. 1......	Henry H. Foxton...........	*	June '89	Irrigation	.21	15
4	John Foxton No. 3......	John Foxton...............		Spring '89	Domestic, irr.	.25	17
4	H. H. Foxton No. 2......	Henry H. Foxton...........		"	Irrigation	.21	15
5	Callais..................	Jos. Callais..................		October '89	"	.80	55
6	J. Foxton No. 4..........	John Foxton		Aug. 31 '97	"	.26	18

Reid Creek, Tributary of La Bonte Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Reid No. 1.............	Rutherford Bros	*	Dec. 17 '85	Irrigation	.70	50
1	" No. 2..............	" "		"	"	.17	12
1	" No. 3..............	" "		"	"	.21	15
1	" No. 4..............	" "		"	"	.43	30
2	Morrison No. 1	Platte Valley Sheep Co.......		June 23 '97	"	.15	10
2	" No. 2	" " " ".......		"	"	.15	10
2	" No. 3	" " " ".......		"	"	.15	10

Owl Creek, Tributary of La Bonte Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Willox No. 1............	Lyman B. Cooper............	*	Feb. 1886	Irrigation	2.04	143
2	" No. 2............	" "		Mar. '87	"	.19	13
3	" No. 3............	" "		May '87	"	.33	23

* Not yet recorded.

OWL CREEK—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	Willox No. 6	Lyman B. Cooper	*	May 1887	Irrigation	.15	10
4	" No. 4	" "		April '88	"	.11	8
5	" No. 5	" "		April '89	"	.26	18
6	Garden	" "		Spring '90	"	.05	3

INDIAN OR WILSON CREEK, Tributary of La Bonte Creek—Converse County .

1	G. L. Foxton No. 1	Geo. L. Foxton	*	Spring '86	Irrigation	.36	25
1	" " No. 4	" "		"	"	.15	10
2	" " No. 2	" "		Spring '87	"	.27	19
2	" " No. 3	" "		"	"	.30	21
3	H. H. Foxton No. 1	Henry H. Foxton		Feb. 14 '94	"	.07	5
4	Foxton Extension	Geo. L. Foxton		Mar. 31 '98	"	.17	12

DEER CREEK—Converse County.

1	Tolland Co. No. 1	Tolland Co.	*	1883	Irrigation	14.71	1030
1	" No. 2	" "		"	"	1.43	100
2	Hilton	Geo. H. Arnold		Spring '85	"	1.16	81.67
3	Carey No. 2	A. T. Seymour		Sept. 1 '85	"	3.06	214
3	" "	Edmund J. Wells		"	"	1.50	105

* Not yet recorded.

Deer Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	Carey No. 2	John Blessing	*	Sept. 1 '85	Irrigation	.87	61
4	Olsen & Heller	John Heller		Dec. 1886	"	1.92	134.87
4	" "	P. Olsen		Dec. 1886	"	.98	63.56
5	Long	Tolland Co.		1888	"	2.43	170
6	Davis No. 1	W. H. Davis		May 1889	"	1.00	70
7	Little Supply	W. A. Briney		Apr. 1 '91	Stock, irrigation	1.66	115
7	" "	Tolland Co.		"	Irrigation	1.30	90
8	Mortimore	Silas Mortimore		June 15 '91	"	1.03	72.41
9	Noah Young	Noah Young		Nov. 1 '91	"	1.00	70
10	" "	P. Olesn		Nov. 4 '91	"	.58	40.49
11	Millar	John Millar		Nov. 7 '93	"	.20	13
12	Hemingway Ditch and Reservoir	Ambrose Hemingway		June 7 '95	"	1.81	126.70
13	Little Supply	Jos. R. Slaughter		Mar. 22 '98	"	1.40	97
13	" "	Tolland Co.		"	"	1.00	70
14	Tolland Co. No. 21	" "		Apr. 19 '98	"	.79	55

West Fork Deer Creek—Natrona and Converse Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Harris	Ernest G. Harris	*	March '89	Irrigation	.63	44

* Not yet recorded.

LITTLE DEER CREEK—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Little Deer Creek Tolland No. 1	Tolland Co.	*	1883	Irrigation	2.07	145
2	Tolland Co. No. 3	"		Fall '89	"	1.43	100
3	" No. 4	"		Season '90	"	.30	20
4	Little Deer Creek Tolland Co. No. 1	"			"	4.50	315

WILLOW CREEK, Tributary of Deer Creek—Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Willow	Izidore G. Phillips	*	June 1 '86	Irrigation	.86	60
2	Denton	Mary A. Denton		June 1 '87	"	.15	10
3	Doyles No. 1	John John		Spring '90	"	.15	10

KING'S BRANCH, Tributary of West Fork Deer Creek—Converse and Natrona Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	King No. 2	Thomas King	*	May 20 '87	Irrigation	2.16	151
1	" No. 1	" "		"	"	1.08	20
2	Harris No. 2	Ernest G. Harris		Spring '87	"	.30	10

* Not yet recorded.

BOX ELDER CREEK—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Carey Box Elder Creek No. 3	J. M. and R. Davis Carey	*	1876	Stock, dom'stic, irr.	4.40	304
2	Macy No. 2	Chas. R. Macy		Spring '82	Stock, irrigation	.33	21
3	Carey Box Elder No. 1	J. M. and R. Davis Carey		May 15 '85	Dom., stock, irr.	18.27	1279
4	" " " No. 2	" " " "		June 1 '85	Dom., stock, irr., reservoir	17.30	1211
5	Smith White	Edward Smith		May '87	Irrigation	.69	48
5	" "	Chas. Smith		May '87	"	.24	17
5	" "	W. H. White		May '87	"	.71	50
6	Brown No. 1	A. H. Brown		Feb. 1888	"	.66	46
7	Clayton	Thos. C. Clayton		Spring '88	"	.57	40
8	Kimball No. 2	B. F. Robbins Estate (W. C. Kimball, administrator)		July 1 '88	"	.21	15
9	Island	Chas. R. Macy		May 1 '89	"	.08	5
10	Dynamite	W. H. White		May 1889	"	.30	21
10	"	Edward Smith		May 1889	"	.15	10
11	Kimball No. 1	B. F. Robbins Estate		August '89	"	.19	13
12	Schlicter	John Schlicter		Oct. 14 '89	Stock, irrigation	.60	40
12	Carey Box Elder No. 5	J. M. and R. D. Carey		"	Dom., stock, irr.	†	
13	" " " No. 4	" " " "		Feb. 2 '93	Dom., stock, irr.	†	
14	Kimball No. 1	E. H. Kimball		Sept. 7 '93	Irrigation	1.14	80
15	Clayton	Thos. C. Clayton		June 7 '95	"	.12	8

* Not yet recorded. † Supplemental to Carey Box Elder Ditches Nos. 1 and 2.

Box Elder Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
16	Box Elder No. 1	Wm. B. Wood	*	Dec. 6 '97	Irrigation	.43	30
16	" " No. 2	" "		"	"	.22	15
17	Dynamite, 2nd app'n	Lewis P. Johnson		Feb. 16 '98	"	.56	39
17	" "	Chas. Smith		"	"	.60	40
18	Brown No. 2	A. H. Brown		Apr. 8 '98	"	.30	21
19	Macy No. 4	Chas. R. Macy & Co.		May 2 '98	"	.11	8

LITTLE BOX ELDER CREEK—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	E. S. No. 1	Edward D. Johnson	*	1879	Irrigation	1.10	77
1	" No. 2	" "		"	"	.36	25
2	Carey Little Box Elder No. 1	J. M. and R. D. Carey		May 20 '85	Irr., stock, dom.	1.60	111
3	Little Box Elder Ditch Co. No. 3	F. G. McCrossin		Spring '85	Stock, irrigation	.39	26
3	Little Box Elder Ditch Co. No. 4	F. G. McCrossin		Spring '85	Domestic, irr.	.87	61
4	Abney No. 1	Jas. M. Abney		May 15 '86	Irrigation	1.40	98
5	Conwell	Martin Conwell		June 1886	"	.71	50
6	Conwell No. 2	Martin I. Conwell		April 8 '98	"	.22	15

* Not yet recorded.

ROOT CREEK, Tributary of Box Elder—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Root No. 2	Chas. Smith	*	Summer '84	Irrigation	.17	12
2	" No. 1	" "		May '86	"	.50	35

SNOW SHOE CREEK, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Snow Shoe	U. S. Grant	*	May '86	Irrigation	.30	20
2	Snow Shoe No. 1	" "		Apr. 8 '98	"	.13	9

HUNTON CREEK, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Macy No. 1	Chas. R. Macy	*	Spring '86	Irrigation	.34	24
2	Hunton Canon No. 1	Walter H. Thayer		Feb. 4 '88	Stock, irrigation	.15	10
2	" " No. 2	" "		"	" "	.67	45
3	" " No. 3	" "		Aug. 8 '92	Irrigation	.93	65
4	Guard	Geo. P. Clayton		Apr. 11 '95	"	.54	38
5	Quarry	Alice C. Clayton		June 7 '95	"	.12	8

BUCK CREEK, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pratt	U. S. Grant	*	June '86	Stock, irrigation	.80	53

* Not yet recorded.

Virden Creek, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
1	Virden Creek No. 1	Wm. B. Wood	*	June '86	Irrigation	.23	16
2	" No. 1	Frank H. Virden		1886	"	.12	8
2	" No. 2	" "		"	"	.44	31
2	" No. 3	" "		"	"	.57	40
2	" No. 4	" "		"	"	.12	8
2	" No. 5	" "		"	"	.10	7
3	Smith No. 1	Martin Smith		March '87	"	.47	33
3	" No. 2	" "		"	"	.10	6
4	Virden Creek No. 1	Wm. B. Wood		May '89	"	.37	26

Strawberry Creek, Tributary of Virden Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Strawberry No. 2	Frank H. Virden	*	1886	Irrigation	.41	29
1	" No. 1	" "		"	"	.15	10

Twin Creek, Tributary of Grant Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Twin Ditches Nos. 1 and 2	U. S. Grant	*	March '87	Irrigation	.30	20

*Not yet recorded.

BERRY CREEK, Tributary of Hay Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Berry	U. S. Grant	*	March '87	Irrigation	.08	5
	HAY CREEK, Tributary of Grant Creek—Converse County.						
1	Hay	U. S. Grant	*	March '87	Irrigation	.15	10
	GRASS CREEK, Tributary of Hay Creek—Converse County.						
1	Grass	U. S. Grant	*	March '87	Irrigation	.15	10
	PEN CREEK, Tributary of Snow Shoe Creek—Converse County.						
1	Pen	U. S. Grant	*	May '87	Irrigation	.15	10
	SPRING CREEK, Tributary of Box Elder Creek—Converse County.						
1	Sullivan No. 1	Wm. C. Sullivan	*	Spring '87	Irrigation	.36	25
2	" No. 2	" "		Fall '87	"	.60	43
3	" No. 3	" "		Spring '90	"	.69	48
4	" No. 4	" "		Nov. '90	"	.44	31

* Not yet recorded.

GROUSE CREEK, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Grouse	Wm. C. Kimball	*	June '87	Irrigation	.08	5

ASPEN CREEK, Tributary of Snow Shoe Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Aspen	U. S. Grant	*	June '87	Irrigation	.15	10

NIGGER GULCH, Tributary of Snow Shoe Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Nigger Gulch	U. S. Grant	*	June '87	Irrigation	.11	7

BATTS CREEK, Tributary of Hunton Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Batt's Canon	W. H. Thayer	*	Feb. 13 '88	Stock, irrigation	.67	45
2	Gordon	Geo. P. Clayton		Spring '89	Irrigation	.06	4

WOOD CREEK, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Wood	Wm. B. Wood	*	May '89	Irrigation	.08	5

* Not yet recorded.

Willow or Cannon Creek, Tributary of Box Elder Creek—Converse County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Willow Canon No. 1	W. H. Thayer	*	April '88	Stock, irrigation	.23	15
1	" " No. 2	" "		April '88	" "	.45	30
1	" " No. 3	" "		April '88	" "	.16	10
1	" " No. 4	" "		April '88	" "	.23	15
2	Grimes No. 2	W. E. Grimes		1888	Irrigation	.33	23

School Creek, Tributary of Box Elder Creek—Converse County.

1	School	Edward Smith	*	1889	Irrigation	.13	9

Lindgren Springs, Tributary of Box Elder Creek—Converse County.

1	Lindgren No. 1	S. P. Lindgren	*	Sept. 15 '96	Irrigation	.60	40

Wagon Hound Creek—Converse County.

1	Guthrie Homestead	Guthrie Bros. Live Stock Co.	*	Spring '83	Irrigation	1.43	100
2	Wagon Hound No. 2	" " " "		Apr. 1 '84	"	1.17	82
2	" " No. 3	" " " "		"	"	4.58	321
4	Robbins No. 1	Gordon V. Fitzhugh		May '84	"	.70	48

* Not yet recorded.

Wagon Hound Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Reco ded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
5	Peterson	Lars G. Peterson	*	Oct. 3 '84	Irrigation	.60	42
6	Robbins No. 1	J. C. Gamel		Fall '84	“	.71	53
6	Westwick-Johnson	Ole P. Peterson		Fall '84	“	.80	59
7	Libby	John W. Marsden		June 10 '85	“	.80	55
8	Westwick	Mary J. Marsden		Apr. 1 '88	“	.31	26
9	Johnson No. 2	Ole P. Johnson		Sept. '88	“	.30	20
9	Buckeye No. 2	W. J. Carothers		Sept. '88	“	.40	30
10	Russell	John B. Russell		Jan. 1889	“	2.20	155
11	Buckeye No. 1	W. J. Carothers		April '89	“	.70	50
12	Albion	Mary J. Marsden		June 23 '91	“	.15	10
13	Russell No. 2	John B. Russell		Apr. 2 '98	“	.30	20

GUTHRIE CEERK, Tributary of Wagon Hound Creek—Converse County.

1	Wagon Hound No. 4	Guthrie Bros. Live Stock Co.	*	Apr. 15 '84	Irrigation	.70	50

LATHAM CREEK, Tributary of Wagon Hound Creek—Converse County.

1	Wagon Hound Ditch Co. No. 2	Guthrie Live Stock Co.	*	May 1 '84	Irrigation		

* Not yet recorded.

TABLE

GIVING CERTIFICATES OF APPROPRIATION OF WATER ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOV. 30, 1896, AND NOV. 30, 1898.

WATER DIVISION NO. 2.

Tongue River—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
17	High Line	H. L. Croghan	301	Nov. 9 '91	Irrigation	1.78	125
17	" "	D. A. Smith	"	"	"	.35	25
17	" "	F. D. Grissell	"	"	"	.50	35
17	" "	Mrs. T. T. Howd	"	"	"	1.78	125
17	" "	Jas. A. Keirnes	"	"	"	.35	25
17	" "	Henry Baker	"	"	"	2.85	200
17	" "	Jos. Campbell	"	"	"	3.57	250
17	" "	J. D. and C. W. Thorn	"	"	"	2.85	200

Tongue River—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
17	High Line	W. N. Robinson	301	Jan. 6 1893	Irrigation	2.85	200
20	York Ditch	Thos. E. Masters	303	"	"	2.85	200
20	" "	Geo. B. Simpson	"	"	"	2.00	140
20	" "	Jesse McPhillamy	"	"	"	1.14	80
20	" "	E. A. Whitney	"	"	"	2.00	140
20	" "	L. H. Brooks and Alf. Diefenderfer	"	"	"	2.57	180
17½	South Side Tongue River and Dayton	E. A. Whitney and B. F. Ketchum	329	July 30 '96	"	2.00	140
36	Hanover Ditch, through O. Z. and K.	T. Hamel	373	Apr. 24 '97	"	2.00	140
22	South Side Tongue River and Dayton Ditch Extension	Elizabeth McNutt Simpson	375	June 2 '93	"	2.97	208
35	Enlargement of the Rowland Ditch	A. R. Frisbie		April 20 '97	"	2.71	190

BUSH CREEK, Tributary of Tongue River—Sheridan County.

19½	Reservoir Ditch	Robert C. Hays	311	Oct. 18 '92	Irrigation	.71	50

BIG GOOSE CREEK—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
45	Alliance	Lewis C. Tidball	305	June 29 '91	Irrigation	2.31	162.5
45	"	Martin D. Shields	"	"	"	2.14	150
45	"	E. A. Whitney	"	"	"	1.43	100
45	"	Wm. Chubb	"	"	"	.71	50
45	"	R. Moline	"	"	"	1.17	82.5
45	"	A. S. Burrows	"	"	"	1.07	75
45	"	Fred McDonough	"	"	"	1.43	100
45	"	Andrew J. Neilsen	"	"	"	1.14	80
45	"	E. B. Viall	"	"	"	4.57	320
45	"	Jos. W. Allen	"	"	"	2.50	175
45	"	Larry Warren	"	"	"	1.14	80
45	"	Samuel P. Strang	"	"	"	2.10	147.5
45	"	Henry B. Emmons	"	"	"	1.14	80
45	"	J. B. Kendrick	"	"	"	.71	50
45	"	C. E. Carpenter	306	"	"	1.00	70
45	"	R. D. Snodgrass	"	"	"	1.14	80
45	"	Geo. W. Downer	"	"	"	1.71	120
45	"	E. W. Scott	"	"	"	.71	50
52	Howd	T. T. Howd	"	Feb. 11 '95	Domestic, irr.	1.10	70
46	Bedford	S. and T. N. Culbertson	308	Feb. 1 '94	Irrigation	1.85	130
50	Ida M. Hecht	Ida M. Hecht	376	Mar. 30 '96	"	.50	35
48	North Side	Washington Thompson	380	Apr. 23 '94	"	.50	35
48	" "	Wm. Timm	"	"	"	.57	40

RAPID CREEK, Tributary of Big Goose Creek—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
58	Hammontree Ditch	W. H. Hammontree	310	Oct. 26 '96	Irrigation	4.54	318
	LITTLE RAPID CREEK, Tributary of Rapid Creek—Sheridan County .						
61	Last Chance Laterals	Ninnie Findahl		May 13 '97	Irrigation	.55	40
	PEARSON'S SPRING—Crook County.						
1	Pearson Ditch	John Pearson	321	Sept. 8 '92	Domestic, irr., manufacturing	.62	30
	CAVE CREEK, Tributary of Big Goose Creek—Sheridan County.						
45½	Cave Creek No. 3........	A. S. Heald	323	July 18 '92	Irrigation	.86	60
51	Extension Cave Creek No. 3	" "	"	Dec. 19 '94	"	1.00	70
59	Cave Creek No. 4........	" "	404	Mar. 8 '97	"	.10	7
59	" " No. 5........	" "	"	"	"	.17	12

HIGH WATER, Tributary of Wolf Creek—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Cascade Ditch	Maggie Taylor	325	June 29 '93	Irrigation	1.50	105

OIL CREEK, Tributary of Skull Creek—Weston County.

3	Oil Creek Ditch	American Oil Co.	327	Sept. 8 '92	Irrigation	5.40	377

JOHNSON CREEK, Tributary of Rock Creek—Johnson County.

3	Home Ditch	John R. Brown	331	May 11 '96	Irrigation	.71	50

YOUNG'S CREEK, Tributary of Tongue River—Sheridan County.

3	Pennoyer Ditch and Laterals	Jane Pennoyer	363	Feb. 26 '97	Irrigation	.50	35

CLEAR CREEK—Sheridan County.

40	Davis & Spencer	Jas. L. Davis	366	Dec. 29 '96	Irrigation	4.00	280
40	" "	Edwin C. Spencer	"	"	"	1.44	100.75

EAST PASS CREEK—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
21	Jones' Laterals	S. E. Harding	368	May 29 '97	Irrigation	.21	15
	HANNA CREEK, Tributary of Little Goose Creek—Sheridan County.						
51	Hays No. 2	R. M. Hays	370	Mar. 8 '97	Irrigation	.21	15
	SPRINGS, Tributary of Little Goose Creek—Sheridan County.						
51	Hays No. 1	R. M. Hays	371	Mar. 8 '97	Irrigation	.43	30
	TRABING CREEK, Tributary of Little Goose Creek—Sheridan County.						
50	Moncreiffe	Wm. Moncreiffe	378	May 7 '94	Irrigation	3.43	240
	LITTLE OR STOCKADE BEAVER CREEK—Weston County.						
22	Deetken & Schuh	B. A. Deetken and M. E. Schuh	404	Oct. 29 '94	Irrigation	5.57	390
23	Davis & Bears	J. H. Bears and Frank Davis	"	Jan. 14 '95	Domestic, irr.	5.80	395

WOLF CREEK, Tributary of Tongue River—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
21	Aber Ditch No. 2	W. G. Aber................	404	Feb. 17 '96	Irrigation	.01	1
21	" " No. 1	" "	"	"	"	.50	35

PINEY CREEK, Tributary of Clear Creek—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
56	Menardi & White........	Chas. J. White..............	404	Nov. 30 '96	Irrigation	2.28	160
61	Prairie Dog Water Supply Co. Ditch	Carrie Weltner		June 3 '98	"	2.14	150

MEAD CREEK, Tributary of Prairie Dog Creek—Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
9	Odell Ditch	Edward R. Odell	404	May 17 '94	Irrigation	.57	40

TABLE

GIVING CERTIFICATES OF APPROPRIATION OF WATER ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOV. 30, 1896, AND NOV. 30, 1898.

WATER DIVISION NO. 3.

Big Popo Agie River—Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
58	Hornecker	John M. Hornecker	276	Oct. 19 '95	Irrigation	1.90	133
58	"	Sarah Hornecker	"	"	"	1.07	75
45½	Gaylor & Warnock	H. G. Nickerson	313	Mar. 30 '91	"	.22	15

Robinson Gulch, Tributary of Little Popo Agie—Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
19	McCord	Eli McCord	278	Feb. 14 '95	Irrigation	.40	28

PASS CREEK, Tributary of Little Popo Agie—Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pass Creek Ditch	John M. Weisbrod	280	Mar. 29 '93	Irrigation	.57	40

NORTH FORK POPO AGIE—Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
30	Harrison	Chas. Silber	382	Feb. 26 '94	Irrigation	1.77	124

NO WOOD RIVER—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	S. V. Ditch	John D. Gill	410	May 1 '85	Irrigation	.79	55
2	Cornell No. 1	Enoch Cornell	"	April 2 '86	"	.30	20
3	Mead No. 1	John Mead	"	May 1 '86	"	.15	10
4	Spratt	Thos. Spratt	"	May 13 '89	"	3.21	225
5	Green Spot	Chas. Mills	"	1889	"	.15	10
5	Cornell No. 2	Enoch Cornell	"	"	"	.12	8
6	Suez	Taylor Bros	"	Mar. 15 '90	"	1.86	130
7	Harmony	O. C. Morgan	"	Mar. 20 '90	"	2.28	160
7	"	Henry Jordan	"	"	Domestic, irr.	.88	60
7	"	Louisa M. Smith	"	"	Irrigation	.21	15
7	"	A. G. Smith	"	"	"	.53	37
7	"	Jas. A. Quiner	"	"	Domestic, irr.	.74	50
8	Umslopogaas No. 2	A. L. Coleman	"	Nov. 1 '90	Irrigation	.64	45
9	Western	L. J. Diehl	"	Aug. 2 '92	"	2.78	195

No Wood River—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
9	Western	Nicholas Carstensen	410	Aug. 2 '92	Irrigation	1.14	80
9	"	Geo. A. Bell	"	"	"	4.08	286
10	Ilg	E. M. Ilg	"	Oct. 16 '93	"	.71	50
10	"	Otto and Arthur A. Ilg	"	"	"	.68	48
17	Avent	Ira M. Avent	"	July 5 '95	"	1.71	120
18	Cornell No. 2, Enlargement	John Mead	"	Sept. 16 '95	"	.21	15
19	Harmony, Mill Ditch Enlargement	Henry Jordan	"	Jan. 4 1896	Mechanical	115	

Box Elder Creek, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Two Bar	Estate of Harvey Booth	410	April '84	Irrigation	.57	40
2	Helms No. 1	Henry Helms	"	April '86	"	.40	28
3	Wells No. 2	Chas. Wells	"	May '87	"	.46	32
4	" No. 1	" "	"	Sept. 1 '87	"	.63	44
5	Helms No. 2	Henry Helms	"	"	"	.31	22

Coon Hollow or Coon Creek Spring—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Dutch	John J. Smith	416	May 17 '89	Irrigation	.26	18

UPPER OR LITTLE CANON CREEK, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Red Bank	Harriet A. Richards	410	June '86	Stock, irrigation	4.57	320
2	Umslopogaas	A. L. Coleman	"	May '89	Irrigation	.50	35
3	Rosebud	Harvey Smith	412	Sept. '90	"	.10	7
4	Hillside	C. S. Waln	"	Feb. 16 '94	"	.93	65
4	"	Alexander Arledge	"	"	"	.50	35

CROOKED CREEK, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	F. D. Helmer or Bremmer No. 1	Frank D. Helmer	412	May 15 '85	Irrigation	1.00	70
1	Ainsworth	Frank S. Ainsworth	"	"	Mechanical, irr.	1.14	80

OTTER CREEK, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Grout	C. E. Shaw	412	Apr. 1 '85	Irrigation	1.05	73.5
2	Dyson	" "	"	May 10 '85	"	.66	46.5
3	Daly	" "	"	1887	"	.54	38
4	Highbie	Clarence J. Highbie	"	May '88	"	2.51	176
5	Sawyer	Geo. Sawyer	"	Nov. 7 '94	"	.71	50

Spring Creek, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Emge & Robinson No. 2..	Wm. Robinson..............	412	May 1 '85	Irrigation	.43	30
1	Waln Bros..............	R. A. Waln................	"	"	"	1.43	100
2	Emge & Robinson	Wm. Robinson..............	"	1886	"	.43	30
3	Standish & Henderson ...	Elmer Chatfield	"	Mar. 20 '87	"	1.93	135
4	Tunnel	A. F. and L. Waln	"	Sept. '88	"	2.86	200
5	" Enlargem't No. 48	R. A. Waln................	"	Sept. 14 '93	"	.36	25

Ten Sleep Creek, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Winn	Milo Burke.................	412	Sept. 1 '84	Irrigation	2.43	160
2	Columbian	Milo and Bessie C. Burke.....	"	May 10 '85	"	3.00	210
3	Bay State No. 1..........	Bay State Cattle Co..........	"	1885	"	1.57	110
4	Burke	Milo Burke.................	"	Aug. 1 '87	"	.43	30
5	Perfection..............	Fred G. S. Hesse	"	Apr. 10 '88	"	7.14	560
6	Bay State No. 2..........	Bay State Cattle Co..........	"	May '90	"	.43	30
7	Wyman	S. A. McLaughlin	"	July 2 '92	"	1.14	80

Brokenback Creek, Tributary of No Wood River—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Carothers No. 2..........	Edward Carothers	412	May 10 1885	Irrigation	.21	15
2	Cranky Jack	John D. Hopkins............	"	1885	"	1.00	70

Brokenback Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
3	Hardscrabble	W. R. Williams	412	Mar. 25 '87	Irrigation	.64	45
4	Carothers' North Fork	Edward Carothers	414	1887	"	.09	6
4	Carothers No. 1	" "	"	"	"	.36	25
4	Carothers No. 3	" "	"	"	"	.29	20
5	North Fork	John D. Hopkins	"	April 1 '88	"	.71	50
6	Dry Fork	H. E. Miller	"	1889	"	.08	5
7	Carothers No. 5	Edward Carothers	"	1890	"	.43	30
7	Carothers No. 6	" "	"	"	"	.08	5
7	Carothers' North Fk. No. 1	" "	"	"	"	.06	4
8	Williams	W. R. Williams	"	July 10 '94	"	.29	20

Paint Rock Creek, Tributary of No Wood River—Big Horn County.

1	Big Bear	David Matthews	414	May 2 '85	Irrigation	.43	30
1	" "	John Luman	"	"	"	1.14	80
2	Meyers	H. W. Meyers	"	Sept. 11 '86	"	.96	67
2	"	John Weintz	"	"	"	.15	10
2	"	Lee Nansell	"	"	"	.86	60
3	Luman and Allen	John Luman	"	April 8 '87	"	.83	58
3	" " "	James D. Allen	"	"	"	.89	62
4	Birnstein	Clara F. Collins	"	Summer '87	"	.86	60
5	Elk	Abraham Gotwals	"	Fall '87	"	2.86	200

Paint Rock Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
5	Elk	John Luman	414	Fall '87	Irrigation	2.64	185
5	"	James D. Allen	"	Fall '87	"	1.43	100
6	Birnstein No. 1	Estate Fred Birnstein; D. B. Stanton, agent	"	1887	"	5.00	350
7	Military	T. F. Nelson	"	May 1888	"	.54	38
8	Go-Ahead	Willis J. Booth	"	May 1 1889	"	1.79	125
8	"	H. D. Hendricks	"	"	"	1.57	110
8	"	T. F. Nelson	"	"	"	.43	30
10	Shuck and Wilson	Zelotes Wilson	"	Mar. 20 '93	"	.79	55
10	" " "	Asa Shuck	"	"	"	1.71	120
11	Rinehart	Dan H. Rinehart	"	Jan. 23 '94	"	.18	12
12	Hyattville	S. W. Hyatt	"	July 2 '94	"	1.00	70
12	"	D. W. Hunsinger	"	"	"	.86	60
16	South Side	Lee Nansell	"	July 5 1895	"	.43	29.3
16	Weintz	John Weintz	"	"	"	1.00	70.18

CHERRY CREEK, Tributary of Box Elder Creek—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Helms	Henry Helms	414	July 11 '95	Irrigation	.26	18

LOWER OR BIG CANON CREEK, Tributary of Ten Sleep Creek—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Hunsinger No. 1	Jacob Hunsinger	416	Oct. 15 '84	Irrigation	2.28	160
2	Hunsinger No. 2	" "	"	Oct. 1 '86	"	2.64	185
3	Canon Creek Ditch	Frank M. Simmons	"	Sept. 4 '93	"	3.64	255

BUFFALO FLAT CREEK, Tributary of Alkali Creek—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Buffalo Flat	John J. Smith	416	1888	Irrigation	.93	65

MEDICINE LODGE CREEK, Tributary of Paint Rock Creek—Big Horn County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	George-Bayne	D. V. Bayne	416	May 20 '85	Irrigation	3.19	223
1	"	Cassall George estate (F. P. Carr, administrator.)	"	"	"	2.53	177
2	Wickwire	Byron Wickwire	"	1885	"	.36	25
3	Allen & Nelson	Theodore F. Nelson	"	Apr. 10 '87	"	1.10	77
3	" "	James D. Allen	"	"	"	.87	61
4	Highland	Lorenzo D. Waln	"	Nov. '87	"	.49	84
4	Waln No. 2	" " "	"	Nov. '87	"	.57	40
5	Hyatt No. 2	Samuel W. Hyatt	"	May 10 '88	"	1.21	85
6	Anthony	Byron Wickwire	"	Sept. 20 '88	"	.08	5
6	"	David Matthews	"	"	"	3.50	245

TABLE

GIVING CERTIFICATES OF APPROPRIATION OF WATER ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOV. 30, 1896, AND NOV. 30, 1898.

WATER DIVISION NO. 4.

Dry Creek, Tributary of Salt River—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
			Page				
13	Johnson, Swanson and Oleson	Charles M. Johnson		Mar. 28 '93	Dom., stock, irr.	2.28	160
14	Larsen & Johnson	Nels L. Larsen	420	May 12 '93	Irrigation	2.07	145
15	Perkins & Hardman	Andrew Hokenson	321	May 7 '95	"	1.64	115
15	Perkins & Hardman, 2nd appropriation	Andrew M. Neilson	"	"	"	2.28	160
15	Perkins & Hardman, 2nd appropriation	Peter Jensen	"	"	"	.86	60

Dry Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
16	Stump & Viegel	Carl Viegel		June 5 '95	Dom., stock, irr.	1.71	120
16	Henderson Enlargement	Niels L. Larsen		"	" " "	.21	15
16	" "	Samuel Henderson		"	Irrigation	.93	65
16	Stump & Viegel	John Stump		"	Dom., stock, irr.	1.50	105
17	Christopherson, Swanson & Oleson	Paul L. Oleson		June 24 '95	" " "	1.43	100
19	Hardman	George R. Hardman	427	July 10 '95	Irrigation	.16	10
20	Hardman enlargement	E. McLatchie	"	July 24 '95	Dom., irr., stock	.57	40
22	Christopherson, Swanson & Oleson	John Nield		Nov. 24 '91	Irrigation	1.14	80
22	Swanson & Oleson	John Nield	420	Nov. 20 '95	"	1.14	80

BLACK'S FORK CREEK—Sweetwater and Uinta Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Carter No. 4	Edgar N. Carter	386	1862	Irrigation	.16	11
1	Carter No. 5	" "	"	"	"	.16	11
2	U. P. R'y. Pipe Line at Church Buttes	U. P. Railway Co.	"	1868	Railway use	.2325 (For 24 hrs.)	
3	U. P. R'y Pipe Line and Pump at Bryan	U. P. Railway Co.	"	Sept. 1872	" "	.155 (For 24 hrs.)	
4	Carter No. 1	E. N. and M. E. Carter and M. Groshon	"	1882	Irrigation	.36	25

Black's Fork Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
4	Carter No. 2	Edgar N. Carter	386	1882	Irrigation	.30	20
5	Gray Bluff	W. B. Brewster	"	June 1 '84	Stock, dom'stic, irr.	1.05	70
6	Hamilton	Naomi Lamb	"	May 15 '86	" " "	1.75	120
7	Jones	Richard S. Jones	"	May 15 '87	" " "	1.05	70
8	Shurtliffe and Early	C. J. and Mary D. Early and Louis V. Shurtliffe	"	1887	Irrigation	2.80	195
9	Early No. 1	James Early	"	May 1888	"	1.14	80
9	Early No. 2	" "	"	May 1888	"	1.14	80
10	W. B. Goodrich	W. B. Goodrich	"	May 10 '89	Irr., stock, dom.	2.32	160
11	Lamb Supply	Maurice Groshon	"	Aug. 1 '89	Irrigation	*	160
11	" "	James R. Lamb	"	"	"		120
11	" "	Mark Manly	"	"	"		100
11	" "	" "	"	"	"		40
11	" "	John Buckstrom	"	"	"		100
11	" "	Robert B. Harvey	"	"	"		70
11	" "	" " "	"	"	"		17
11	" "	Amos Hill	"	"	"		164
11	" "	H. W. Stevens	"	"	"		70
11	" "	H. J. B. Taylor	"	"	"		140
11	" "	A. R. Marchessault	"	"	"		160
11	" "	W. H. Harvey	"	"	"		60
11	" "	" "	"	"	"		70

* See foot-note on following page.

Black's Fork Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
11	Lamb Supply	Maurice Groshon	386	Aug. 1 '89	Irrigation	*	80
11	"	" "	"	"	"		375
11	"	W. H. Lamb Estate	"	"	"		60
11	"	W. H. Lamb Estate	"	"	"		20
11	"	G. P. and R. B. Harvey	"	"	"		70
11	"	George M. Lamb	"	"	"		150
12	Moslander	Stoddard & Moslander	"	Sept. 5 '89	Dom., stock, irr.	2.10	145
13	Brewster	W. B. Brewster	"	June 5 '90	" " "	1.05	70
14	Fort Bridger Canal	Fort Bridger Canal Co.	"	Apr. 1 '95	Irrigation	13.64	954.5
18	Shirk No. 1	Jesse C. Spencer	"	Sept. 1 '92	Dom., stock, irr.	2.20	153
18	" No. 1	Daniel Nash	"	"	" " "	.66	45
18	" No. 1	Francis W. Boam	"	"	" " "	1.75	120
18	" No. 1	Richard S. Jones	"	"	" " "	1.20	80
19	East Side Nash	Daniel Nash	"	Sept. 29 '92	" " "	.55	35
20	White, Mansfield & Robbins	James O. Mansfield	388	Nov. 19 '92	" " "	2.30	158
20	White, Mansfield & Robbins	William O. White	"	"	" " "	2.32	160
21	Smith	Silvia Smith	"	Mar. 6 '93	" " "	2.32	160
22	Smith, 2nd appropriation	Sarah Collett	"	Apr. 20 '93	" " "	.50	30
23	Shirk No. 2	John M. Shirk	"	Oct. 23 '93	" " "	2.16	150
26	Ingersol	L. E. and C. J. Ingersol	"	June 9 '94	" " "	4.60	320

* Appropriations numbered 11 are supplemental to priorities Nos. 1-2-4-5-6-8-9-10-11-14-15-18-19-20-21-24 on Smith's Fork Creek, pages 293-4-5 of this Report.

Black's Fork Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
27	Robbins	Charles Robbins	388	Sept. 19 '94	Dom., stock, irr.	2.32	160
31	Carter No. 3	Edgar N. Carter	"	Sept. 3 '95	Irrigation	2.17	152
32	Carter No. 1, 2nd app'n.	Edgar N. and M. E. Carter and M. Groshon	"	Sept. 19 '95	"	1.44	101
32	Carter No. 2, 2nd app'n.	Edgar N. Carter	"	Sept. 28 '95	"	1.91	134
39	Twin Buttes	Peter Nelson	"	Nov. 30 '96	Dom., irr., stock	1.32	90
39	" "	L. E. Johnson	"	"	" " "	.90	60

Smith's Fork Creek, Tributary of Black's Fork Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Groshon No. 3	Maurice Groshon	388	1872	Irrigation	2.28	160
1	Lamb Nos. 1 and 2	James R. Lamb	"	"	Domestic, irr.	1.75	120
2	Nye & Taylor	William Nye	"	1876	Stock, irr., dom.	.45	30
2	Nye	" "	"	"	" " "	.15	10
2	Horace Lamb	William Ewing	"	"	" " "	.15	10
2	" "	Mark Manly	"	"	" " "	1.45	100
3	Carter Nos. 4 and 5	William N. Carter	"	1877	Irrigation	1.15	80
3	Carter Nos. 2, 3, 6, 7 and 8	J. Van A. Carter Estate	"	"	Stock, irr., dom.	1.75	120
4	Harvey Bros.	John Buckstrom	"	May '84	" " "	1.45	100
5	Harvey Bros. No. 2	Robert B. Harvey	"	July 1 '84	Irrigation	1.00	70
6	R. B. Harvey	" "	"	1884	"	.25	17

Smith's Fork Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
7	Uinta Farm Irrigating (Carter No. 1)	J. Van A. Carter Estate	388	July 1886	Irrigation	5.71	400
8	Lamb	Naomi Lamb	"	Fall 1886	"	2.28	160
8	Hill No. 1	Amos Hill	"	1886	"	.14	10
8	" No. 2	" "	"	1886	"	.40	27
8	" No. 3	" "	"	1886	"	.93	65
8	" No. 4	" "	"	1886	"	.28	20
8	" No. 5	" "	"	1886	"	.28	20
8	" No. 6	" "	"	1886	"	.31	22
9	Stevens No. 1	H. W. Stevens	"	April '87	"	.28	20
9	" No. 2	" "	"	April '87	"	.36	25
9	" No. 3	" "	390	April '87	"	.36	25
10	W. H. Lamb No. 1	W. H. Lamb Estate	"	May 1 '87	Dom., stock, irr.	.90	60
10	W. H. Lamb No. 2	W. H. Lamb Estate	"	May 11 '87	Irrigation	.28	20
11	Harvey No. 1	George P. and R. B. Harvey	"	May 1887	"	1.00	70
12	Valdez No. 1	J. M. Valdez	"	1887	Dom., stock, irr.	.25	15
12	" No. 2	" "	"	1887	Dom., stock, irr.	.40	25
12	" No. 3	" "	"	1887	Dom., stock, irr.	.40	25
12	" No. 4	" "	"	1887	Dom., stock, irr.	.25	15
12	" No. 5	" "	"	1887	Dom., stock, irr.	.25	15
12	" No. 6	" "	"	1887	Dom., stock, irr.	.30	20
13	Hamilton & Johnson	Robert Hamilton	"	April '88	Dom., stock, irr.	1.25	85
13	" " "	Charles T. Johnson	"	April '88	Dom., stock, irr.	1.45	100

Smith's Fork Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Reco ded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
14	Taylor 1, 2, 3, 4 and Nye & Taylor	H. J. B. Taylor	390	May 1 '88	Irrigation	2.00	140
14	Johnson	Newton D. Johnson	"	"	Dom., stock, irr.	1.05	70
14	"	Charles T. Johnson	"	"	Dom., stock, irr.	.10	5
14	"	Albert M. Johnson	"	"	Dom., stock, irr.	.60	40
15	French Nos. 1, 2, 3, 4 and 5	A. R. Marchessault	"	May '88	Irrigation	2.28	160
16	Taylor, Myrick & Myrick	H. E. Myrick	"	Spring '88	Dom., stock, irr.	1.45	100
17	Horace Lamb, 2nd app'n.	William Ewing	"	Season of '88	Dom., stock, irr.	1.05	70
18	Harvey No. 1	W. H. Harvey	"	Apr. 19 '89	Irrigation	.86	60
19	Miller	Thomas I. Johnson	"	1889	Dom., stock, irr.	1.20	80
19	Miller, Heide & Hawkins	James M. Miller	"	1889	Dom., stock, irr.	2.10	145
19	" " "	John T. Hawkins	"	1889	Dom., stock, irr.	2.25	155
19	" " "	Andrew Heide	"	1889	Dom., stock, irr.	1.56	108
19	Groshon No. 2	Mrs. Agnes Hewitt	"	1889	Irrigation	1.43	100
19	" No. 2	Maurice Groshon	"	1889	"	1.14	80
19	South Side	Maurice Groshon	"	1889	"	5.36	375
20	Harvey No. 2	W. H. Harvey	"	June '89	"	1.00	70
21	Mark Manly	Mark Manly	"	Fall '89	"	.57	40
22	Heide No. 3	Thomas I. Johnson	"	Apr. 9 '90	Dom., stock, irr.	.75	50
23	Richardson	Lot W. Haley	"	June '90	Irrigation	.86	60
24	Lamb No. 1	George M. Lamb	"	Sept. 1890	"	.43	30
24	" No. 2	" "	"	Sept. 1890	"	1.71	120
25	Heder	Albert Heder	"	May 10 '94	"	1.43	160

HAM'S FORK CREEK, Tributary of Black's Fork Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pipe Line and Pump	U. P. R'y Co. at Granger	390	1868	Railway purposes	.62	
2	Wright No. 1	James M. Wright	"	1881	Dom., stock, irr.	1.90	130
3	Charles F. Robinson	Charles F. Robinson	"	Spring '82	Dom., stock, irr.	7.15	500
4	S. H. Wright	H. H. Harker	392	"	Irrigation	1.00	70
4	O. S. L. R'y and Pump at Waterfall	O. S. L. and U. N. R'y	"	1882	Railway use	.16	
4	O. S. L. R'y and Pump at Nutria	O. S. L. and U. N. R'y	"	1882	Railway use	.16	
5	Quealy Nos. 1, 2 and 3	P. J. Quealy	"	Mar. 20 '84	Irrigation	3.43	240
6	Winslow, Halleck & Capen	George H. Capen	"	Nov. 12 '84	Dom., stock, irr.	5.20	360
6	" " "	S. H. and E. A. Capen	"	"	Dom., stock, irr.	4.85	335
6	" " "	I. C. Winslow	"	"	Dom., stock, irr.	5.20	360
6	Fabian & Tyler	Wahsatch Stock Raising Co.	"	"	Irrigation	9.30	650
7	Wright No. 2	James M. Wright	"	May '85	Dom., stock, irr.	1.75	120
8	Fabian	Wahsatch Stock Raising Co.	"	1885	Irrigation	1.71	120
9	Sarah A. Wright	Sarah A. Wright	"	Spring '86	"	.57	40
10	Sarah H. Fenner	Sarah H. Fenner	"	Fall '86	"	2.86	200
11	J. O. Wright	J. O. Wright	"	May '87	Dom., stock, irr.	1.75	120
12	Curtis Spring	J. D. Curtis	"	June 10 '87	Dom., stock, irr.	.80	55
13	Wood Irrigating	Harry Wood Estate	"	Oct. 7 '87	Irrigation	1.43	100
14	Philbrick & Johnson	Josephine E. Anderson	"	1887	Stock, irrigation	.30	20
15	Curtis, Miller, Sutton & Wood	Harry Wood Estate	"	May 10 '88	Dom., stock, irr.	1.10	75

Ham's Fork Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
15	Curtis, Miller, Sutton & Wood	William Sutton	392	May 10 '88	Irrigation	1.14	80
16	Miller Nos. 1 and 2	Joseph Miller	"	May 25 '88	"	1.43	100
17	Burke	Charles E. Burke	"	Spring '88	"	1.57	110
18	Curtis Irrigating	James D. Curtis	"	June 1 '88	"	3.14	220
19	Chrissman No. 1	J. W. Chrissman	"	Aug. 31 '88	Dom., stock, irr.	4.00	270
19	" No. 2	" "	"	"	Dom., stock, irr.	.45	30
20	Wright No. 1, 2nd app'n.	James M. Wright	"	Season '89	Dom., stock, irr.	1.10	75
21	Mary E. Miller	Mary E. Miller	"	Apr. 4 '90	Irrigation	.86	60
22	Sarah A. Wright, 2nd appropriation	Sarah A. Wright	"	Mar. 28 '92	"	.50	35

LITTLE CREEK, Tributary of Big Muddy Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Little Creek	Charles L. Byrne	394	Oct. 1 '87	Dom., stock, irr.	.35	22
2	Garner	Henry Reco	"	June 1888	Dom., stock, irr.	1.20	80

ALBERT CREEK, Tributary of Little Muddy Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	C. E. Castle Nos. 1 and 2	Albert Byrne Estate (John W. Byrne, administrator.)	394	June '84	Dom., stock, irr.	.60	40

Big Muddy Creek, Tributary of Black's Fork Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Pipe Line and Pump at Piedmont	U. P. Railway Co.	392	1868	Railway use	.31	
2	Pipe Line and Pump at Bridger	U. P. Railway Co.	"	1872	Railway use	.155	
3	East Muddy	Charles Guild	"	May '81	Dom., stock, irr.	2.10	145
4	West Muddy	" "	"	May '82	" " "	5.10	355
5	J. P. Byrne	John P. Byrne	"	July 15 '84	" " "	3.10	213
6	J. W. Byrne Irrigating Canal No. 2	Joseph W. Byrne	"	Apr. 1 '87	" " "	2.75	190
7	Stoddard	Stoddard & Moslander	"	Apr. 40 '87	" " "	3.00	200
8	John Cross	John Cross	"	May 9 '87	" " "	1.25	85

Clear Creek, Tributary of Little Muddy Creek—Uinta County.

1	Whitney No. 1	Chambers & Whitney	394	Nov. '84	Irrigation	2.00	140
1	" No. 2	" " "	"	Nov. '84	"	1.00	70
1	" No. 3	" " "	"	Nov. '84	"	1.00	70
1	" No. 4	" " "	"	Nov. '84	"	1.00	70

Silver Springs, Tributary of Big Muddy Creek—Uinta County.

1	Silver Spring	Charles L. Byrne	394	June '82	Dom., stock, irr.	1.15	80

LITTLE MUDDY CREEK, Tributary of Big Muddy Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Byrne Nos. 1, 2, 3 and 4	E. W. and Frank Byrne	394	Spring '81	Irrigation	2.07	145
2	Shurtliffe No. 1	A. H. Elam	"	1883	Dom., stock, irr.	.90	60
2	" No. 2	" "	"	"	" " "	.45	30
2	" No. 3	" "	"	"	" " "	1.90	130
3	Bradley Nos. 1 and 2	Wahsatch Stock Raising Co.	"	March '85	Irrigation	3.57	250
4	Whitney No. 1	Chambers & Whitney	"	Spring '86	Dom., stock, irr.	6.35	440
5	J. W. Byrne Irrigating Canal No. 1	Joseph W. Byrne	"	June 11 '86	Irrigation	2.28	160
6	Whitney No. 2	Chambers & Whitney	"	Spring '90	Dom., stock, irr.	3.45	240
7	Bell	James L. Bell	"	Apr. 15 '92	Irrigation	.57	40

LA SELLE CREEK, Tributary of Little Muddy Creek—Uinta County.

1	Ryckman No. 1	J. H. Ryckman	394	June '85	Stock, irr., dom.	.15	10
1	" No. 2	" "	"	June '85	" " "	.30	20
1	" No. 3	" "	"	June '85	" " "	.15	10
1	" No. 4	" "	"	June '85	" " "	.23	15
1	" No. 5	" "	"	June '85	" " "	1.45	100

CORRAL CREEK, Tributary of Ham's Fork Creek—Uinta County.

1	Corral Creek	Michael McTigue	394	June '90	Irrigation	.57	40

WILLOW CREEK, Tributary of Smith's Fork Creek—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
1	Johnson Willow Cr. No. 2	Joseph A. Johnson...........	394	1876	Dom., stock, irr.	.90	60
2	Miller & Heide..........	Miller & Heide...............	"	April '89	" " "	.40	26
3	Miller & Heide No. 2....	" "	"	Apr. 26 '92	" " "	.40	26

BEAVER CREEK, Tributary of Ham's Fork Creek—Uinta County.

1	E. Stock................	Ephraim Stock	394	May 15 '89	Irrigation	5.71	400
1	" "	Isaac Furgeson..............	"	"	"	2.50	174
2	J. Mohr.................	Jacob Mohr	"	Aug. 6 '89	"	1.43	100

CAMP CREEK, Tributary of Ham's Fork Creek—Uinta County.

1	Camp Creek.............	Reuben A. Miller............	394	May 14 '92	Dom., irr., stock	1.40	95

SWIFT CREEK, Tributary of Salt River—Uinta County.

17	North Canal	John F. Astle...............	427	April 1 '95	Irrigation	1.14	80
17	North Canal	Edmund Hepworth	"	"	"	1.00	70
17	Flag Staff...............	N. L. Venter, John Wilks and John Astle................	"	"	Dom., stock, irr.	2.78	195

Swift Creek—*Concluded.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
17	Burton No. 2	Charlotte Cook	427	Apr. 1 '95	Irrigation	.29	20
18	Enlargement North Canal	James Jensen, Sr.	420	Apr. 11 '95	Stock, irr., dom.	.50	35
18	North Canal	Hans P. Nelson	"	"	" " "	.86	60
19	Enl. Halling & Jensen	Jens. E. Jensen	"	Apr. 13 '95	Irrigation	1.14	80
21	North Canal	Ole Peterson	"	June 5 '95	"	.71	50
21	North Canal	John P. Peterson	427	"	"	.57	40
22	Enlargement Afton Canal	A. V. Call	"	June 8 '95	"	1.00	70
22	Enlargement Afton Canal	Town of Afton	"	"	Dom., stock, irr.	.29	20
22	Enlargement Afton Canal	Isaac Biglow	"	"	" " "	1.00	70
22	Enlargement Afton Canal	E. G. Cazier	"	"	" " "	1.14	80
22	Enlargement Afton Canal	W. H. Kennington	"	"	Irrigation	.29	20
24	Halling	Thos. T. Nield	"	Nov. 20 '95	"	.57	40
24	Halling	John P. Peterson	"	"	"	.57	40

BIRCH CREEK, Tributary of Salt River—Uinta County.

4	Wolfly	Fred Wolfly	420	Sept. 5 '94	Irrigation	.86	60

BAKER CANON or LEE CREEK, Tributary of Salt River—Uinta County.

1	Baker	Alonzo Baker	421	Aug. 16 '94	Irrigation	.42	30

SALT RIVER—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
28	Salt River	Wm. J. Jensen	427	July 10 '95	Irrigation	1.14	80
28	Salt River	Chas. Smith	"	"	"	1.35	95
28	Salt River	Thos. Sprague	"	"	"	1.43	100
28	Salt River	W. A. Hodges	"	"	"	1.43	100
	CROW CREEK, Tributary of Salt River—Uinta County.						
15	Fairview Canal	Jos. Horrocks	421	July 10 '95	Irrigation	.42	30
15	Fairview Canal	Jas. M. Wells	427	"	"	.29	20
15	Fairview Canal	Peter Hood	"	"	"	.29	20
	SOUTH DRY CREEK, Tributary of Dry Creek—Uinta County.						
14	Johnson, Swanson & Oleson	N. J. Christopherson	420	May 26 '93	Irrigation	2.28	160
14½	Coleman	Geo. M. Coleman	"	Feb. 16 '95	"	.86	60
	SPRAGUE CREEK, Tributary of Salt River—Uinta County.						
1	Sprague	Thomas Sprague		July 6 '97	Dom., stock, irr.	.43	30

COTTONWOOD CREEK, Tributary of Salt River—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
11	Bowles Canal	Samuel V. Bowles	427	May 20 '93	Irrigation	2.04	143
11	Upper North Canal	A. L. Hale	"	"	Dom., stock, irr.	2.28	160
11	Upper North Canal	Thos. Walton	"	"	Irrigation	.43	30
12	Wilber	Stephen K. Wilber	421	June 24 '93	"	1.14	80
12	Wilber	Jas. H. Jensen	"	"	"	.84	60
12	Wilber	David Yeaman	"	"	"	.71	50
13	Upper North Canal	Wm. Gomm	"	June 24 '95	Dom., stock, irr.	.14	10
17	Jensen Ditch	Ole Jensen	"	July 23 '95	Dom., stock, irr.	.37	26

STRAWBERRY CREEK, Tributary of Salt River—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
16	Enlargement Beaver Dam	Chas. G. Heiner		July 18 '95	Dom., stock, irr.	1.14	80
17	Enlargement South End	Bernard Anderson		Aug. 20 '95	Dom., stock, irr.	2.00	140
17	Enlargement South End	Geo. Merritt		"	Dom., stock, irr.	1.29	90
18	Hincks	R. and J. B. Mathie		Aug. 21 '95	Dom., stock, irr.	2.45	172
19	Hincks Enlargement	Mary Hincks		Sept. 9 '95	Dom., stock, irr.	1.14	80
22	Enl. Luthi & Wolfly	J. B. Thatcher		May 13 '96	Dom., stock, irr.	1.43	100
22	Enl. Luthi & Wolfly	Rudolph Wolfly		"	Dom., stock, irr.	1.57	110
23	Neuenschwander	Fred Neuenschwander		June 8 '96	Dom., stock, irr.	1.14	80

WILLOW CREEK, Tributary of Salt River—Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Recorded in Book 2 Page	Date of Priority	Use to Which Applied	Amount Appropriated, Cubic Feet per Second	Acres Irrigated
7	Turner	J. B. Thatcher		Sept. 26 '94	Irrigation	2.28	160
12	Turner Enlargement	Geo. T. Adams		July 18 '98	Dom., stock, irr.	1.57	140
12	" "	Richard Hincks		"	Dom., stock, irr.	1.35	95

CEDAR CREEK, Tributary of Salt River—Uinta County.

2	Farmer	Caleb D. Blazeard		May 27 '95	Dom., stock, irr.	1.71	120

BROWN CREEK, Tributary of Salt River—Uinta County.

1	Brown	Ezra Brown		May 17 '97	Dom., stock, irr.	.43	30

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THIRD BIENNIAL REPORT

--OF THE--

STATE ENGINEER

--TO THE--

GOVERNOR OF WYOMING.

1895 and 1896.

CHEYENNE, WYO.
THE S. A. BRISTOL COMPANY, PRINTERS AND BOOKBINDERS.
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Engineering

Y
OF THE
UNIVERSITY OF ILLINOIS

DEVIL'S GATE, SWEETWATER RIVER.

CHEYENNE, NOV. 30TH, 1896.

TO THE HONORABLE
WILLIAM A. RICHARDS,
GOVERNOR.

SIR:—

As provided for in Section 12, Chapter 8, Laws of 1890-91, I have the honor to submit a report of the work of this office during the past two years, with such recommendations as experience has led me to believe will increase the efficiency of the water laws and promote the growth of the interests connected therewith.

Yours very respectfully,
ELWOOD MEAD,
State Engineer.

LIST OF OFFICERS

IN CHARGE OF

PUBLIC WATERS IN WYOMING.

STATE BOARD OF CONTROL.

Elwood Mead, State Engineer, President -	Cheyenne
J. A. Johnston, Sec'y and Sup't Water Div. No. 1	Cheyenne
Edward Gillette, Superintendent Water Div. No. 2	Sheridan
N. H. Brown, Superintendent Water Div. No. 3	Lander
C. H. Priest, Superintendent Water Div. No. 4	Evanston

WATER DIVISION No. 1.

J. A. Johnston,	Superintendent	-	-		Cheyenne
W. D. Pease,	Commissioner	District	No.	1,	Cheyenne
George W. Snow,	“	“	“	2,	Little Bear
J. L. Jordan,	“	“	“	3,	Iron Mountain
Price Jacobs,	“	“	“	4,	Laramie
C. H. Jones,	“	“	“	5,	Laramie
Wm. Brauer,	“	“	“	6,	Saratoga
David F. Crout,	“	“	“	7,	Collins
J. M. Calvert,	“	“	“	8,	Dixon
Daniel Fitgar,	“	“	“	10,	Johnstown
Ed. S. White,	“	“	“	11.	
A. G. Lourey,	“	“	“	14,	Lusk

WATER DIVISION NO. 2.

Edward Gillette,	Superintendent, - -		Sheridan
F. E. Hanson,	Commissioner District No.	1,	Newcastle
David Rinker,	“ “ “	2,	Mayoworth
R. J. Daly,	“ “ “	3,	Buffalo
E. T. Chilcott,	“ “ “	4,	Sheridan
Edward R. Dinwiddie,	“ “ “	5,	Dayton
Adolphus Yonkel,	“ “ “	6,	Slack

WATER DIVISION No. 3.

N. H. Brown,	Superintendent, - - -		Lander
A. P. Battrum,	Commissioner District No.	1,	Lander
J. N. Meyer,	“ “ “	2,	Lander
Chas. K. Walsh,	“ “ “	3.	

WATER DIVISION No. 4.

C. H. Priest,	Superintendent, - -		Evanston
Chas. Rathburn,	Commissioner District No.	1,	Fontenelle
Melvin Henderson,	“ “ “	8,	Afton

REVIEW OF WORK

—OF THE—

STATE ENGINEER'S OFFICE,

IN 1895 AND 1896.

INCREASED CORRESPONDENCE.*

From the establishment of this office to the present there has been a continuous increase in the clerical work connected therewith. This has been especially marked during the past two years. With the accumulation of records and of data showing the State's agricultural possibilities, settlers of this State and those contemplating settlement or investment are coming more and more to depend upon the Engineer's office for authoritative information. To furnish the information asked for is a legitimate and important part of the duties and usefulness of the office, and we are desirous of aiding in this way all those interested in developing the State, but to do this properly involves research and takes time. It has seriously curtailed much needed field work and has prevented any study of important irrigation problems, of which the duty of water and the return of seepage waters are examples.

CHANGE IN CHARACTER OF ENGINEER'S DUTIES.

The duties of the State Engineer have been further increased and diversified by the examination of projects to reclaim land under the Carey Act. Permits for appropriations have to be more closely scrutinized, and the examination of estimates of cost of works has not only taken much time but has involved the loss of more, in corresponding with the parties submitting them. The importance of these matters has made it necessary for the Engineer to restrict his absences from the office, and this in turn has interfered with the prosecution of field work and necessitated turning over the surveys of ditches and preparing of maps for adjudications to his assistants.

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* Seventy-five per cent. more official letters were written in 1896 than in 1894.

SURVEYS OF STREAMS AND DITCHES.

The urgency and importance of an early adjudication of rights to water, acquired under territorial laws, is great. All the time which could be devoted to field work and all the money which could be spared from the contingent appropriation, has been expended on the surveys and measurements of ditches and preparation of maps to be used in the determination of these rights. Little was done in 1895, but satisfactory progress was made in the year just closed.

Thirty-three ditches, having a total length of forty miles, were surveyed in 1895. Four hundred and eighty-two ditches, with a total length of 480 miles, were surveyed in 1896. The results of these surveys will be given in detail in subsequent portions of this report.

STREAM GAUGINGS.

Through the co-operation and aid of the U. S. Geological Survey we have been able to greatly increase our knowledge of the character and discharge of some of our important streams. The report of these gaugings shows the extent of our unused resources and the direction which our future efforts at extending the reclaimed area should take. I commend this portion of the report to all those interested in the State's future and shall be pleased to supplement the information therein contained by other data in the office, which lack of time has prevented preparing for publication.

APPLICATIONS FOR PERMITS TO APPROPRIATE WATER.

The total number of permits filed and recorded since the enactment of the State law is 1,601. Of these, 1,378 are for new ditches and 223 for the enlargement of ditches already constructed. One hundred and fifty-nine applications have been cancelled; 135 appropriations have been perfected, while 442 permits have expired with no notice of completion of works. During the past two years 891 applications have been filed and recorded, of which 762 were for original ditches and 129 were for enlargements. Sixty-one reservoir permits have been received and recorded and the plans for their construction approved. The examination of these papers has entailed much labor, with, in some cases, unsatisfactory results. Reservoir dams are too often a standing menace to life and property. They sometimes fail when built under the personal supervision of skilled and experienced engineers. I never approve a plan, therefore, without some misgivings as to the result and a belief that there should not only be supervision of plans but of construction as well.

The legislation of 1895, requiring better maps and permitting inquiry into financial standing and good faith of applicants, has resulted in a great improvement in the character of applications and in the accuracy of maps filed to accompany them. It has also necessitated increased care on the part of the State Engineer in the examination of these papers and frequent explanations as to the purpose and necessity of these added requirements.

Some interesting questions, concerning the character of the right acquired through the approval of an application to appropriate water, have been raised during the past two years. These will be discussed in a subsequent portion of this report.

FEES.

Since the approval of the law providing for fees, the following amounts have been collected and paid into the State treasury.

1895	
February March	$ 47.00
April May June	218.70
July August September	217.95
October November December	190.25
1896	
January February March	265.10
April May June	230.70
July August September	165.75
TOTAL......	$1,335.45

This money has been available to pay for clerical assistance and has enabled the office to keep pace with the increased duties imposed, something impossible with the amount directly appropriated by the legislature.

ADJUDICATION OF WATER RIGHTS.

One thousand and two rights to water have been adjudicated since the publication of the last report of this office, and Certificates of Appropriation have been issued in all except a few cases where they are held for the payment of fees.

The total volume of water thus dedicated to beneficial uses is 3,394.025 cubic feet per second, and water rights have thereby become attached to 92,393.41 acres of land. Sixty streams and two springs furnish the volume thus disposed of. The following summary gives the location and extent of these rights:

SUMMARY OF CERTIFICATES OF APPROPRIATION, ISSUED BY THE STATE BOARD OF CONTROL BETWEEN SEPTEMBER 1ST, 1894, AND SEPTEMBER 1ST, 1896.

District No.	NAME OF STREAM	Total No. of Appropriators	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
1	Spring Creek	4		
1	Sand Creek	18	25.40	1,768.
1	Horse Creek	1	8.28	580.
1	Little Laramie River	3	3.42	240.
1	Spring (Sec. 20-16-85)	1	.10	
1	Lodge Pole Creek	1	6.28	440.
1	Cotton Creek	2	2.28	160.
1	Horse Creek	11	11.37	790.
1	Cow Creek	1	1.43	100.
2	Stockade Beaver	38	79.46	2,039.
2	Skull Creek	10	15.89	1,113.
2	Twin Creek	13	10.085	710.
2	Tongue River	35	60.39	3,210.
2	Bush Creek	1	.71	50.
2	Big Goose Creek	125	282.18	19,779.5
2	Clear Creek	66	517.16	14,514.
2	French Creek	13	10.44	727.
2	Rock Creek	53	187.37	13,119.
2	Sayles Creek	9	8.18	571.
2	Shell Creek	4	5.52	387.
2	Johnson Creek	2	3.13	220.
2	Piney Creek	224	325.12	24,440.51
2	Prairie Dog and Tributaries	8	5.45	389.
2	East Pass Creek	12	17.42	1,216.
2	Spring	1	.10	5.
2	Porcupine Creek	1	1,141.1	
3	Meadow Gulch	1	.50	40.
3	East Squaw Creek	1	.20	17.5
3	Big Popo Agie River	2	.86	60.
4	Salt River and Tributaries	62	285.40	5,295.
4	Dry Creek	23	18.7	1,220.
4	Cottonwood Creek	29	29.8	1,995.
4	Stump Creek	17	27.8	1,890.
4	Crow Creek	22	30.1	2,042.
4	Strawberry Creek	26	26.7	1,799.
4	Swift Creek	99	110.7	4,055.9
4	Willow Creek	4	14.3	150.
4	Dry Canon Creek	2	.8	45.
4	Cedar Creek	2	2.1	140.
4	Flat Creek	2	.9	55.

SUMMARY—*Concluded.*

District No.	NAME OF STREAM	Total No. of Appropriators	Total Volume Appropriated Cu. ft. per sec.	Acres Irrigated
4	Nickle Springs Creek	1	.18	120.
4	Birch Creek	1	.6	40.
4	Vail Creek	3	3.9	265.
4	Hanson Creek	1	.3	20.
4	Tom's Canon Creek	3	5.1	350.
4	Harmon Creek	1	.3	20.
4	Spring Creek	2	3.0	205.
4	Campbell Springs	1	.3	15.
4	Hurd Canon and Astle Springs	1	.1	
4	Jensen Creek	1	.3	20.
4	Hepworth Springs	1	.1	
4	Phillips Creek	2	2.2	37.
4	Mill Creek	1	.6	40.
4	Bradshaw Springs	1	.1	6.
4	Jensen Springs	1	.8	50.
4	Spring Branch	1	3.5	240.
4	Henrie Springs	1	.2	10.
4	Stewart Creek	1	4.6	320.
4	Fontenelle Creek	1	.9	60.
4	La Barge Creek	36	87.04	6,080.

UNFINISHED ADJUDICATIONS.

In addition to the completed adjudications, surveys have been made of the ditches diverting water from Black's Fork and its tributaries and Medicine Bow and its tributaries. The testimony of appropriators has been taken, submitted to public inspection, and will receive final consideration at the next regular meeting of the Board of Control. This testimony is quite voluminous and includes proof of the beneficial use of water of 150 appropriators on Black's Fork Creek and its tributaries, and of 193 appropriators from Medicine Bow and its tributaries. The total area of land claimed to be irrigated on the first stream is 18,000 acres, and on the second, 33,000 acres. These figures serve to show the importance which irrigation has attained on two streams hitherto but little thought of or written about in the discussion of the State's agricultural possibilities.

Surveys have also been made of the ditches taking water from No Wood River and its tributaries, in Water Division No. 3. The maps of these ditches have not yet been prepared, but will be during the winter, and the proofs of appropriation will be taken early next season.

STATE LAND SELECTIONS.

The State Board of Control, acting as a Special Commission, selected for the State, in March, 1896, 125,306.22 acres of land. On November 10th, 93,160.7 acres of this had been leased, and leases were pending for 23,312.49 acres, the total annual income from these leases, completed and pending, being $5,368.80.

At the meeting in October the commission recommended an additional selection of 50,781 acres. Including requests held for further consideration at the meeting in March, 1897, there is now before the commission awaiting examination or final action, requests for the selection of about half a million acres. These lands will be examined before the meeting in March, 1897, and the selection to be made at that time will probably absorb the entire grant.

EXAMINATION OF PROJECTS TO RECLAIM STATE LAND.

Under the State land law the State Engineer is required to advise the Land Board as to the feasibility of projected works, the adequacy of the water supply, and as to whether or not the projected canal is large enough to supply the required volume. It is also his duty to examine the land and to determine whether it is agricultural, non-mineral and desert in character. He must also advise the Land Board as to whether the estimate of cost submitted is reasonable.

Under this law the State Engineer becomes the consulting engineer of the Land Board. To enable him to advise them intelligently it is indispensable that he have an accurate personal acquaintance with both the land to be reclaimed and the line of the projected canal.

The regulations of the United States Land Office require each state application for segregation of land to be accompanied by an affidavit of the State Engineer, or an engineer in the employ of the State, which sets forth that the surveys shown on the map filed were made by him or under his direction.

As the state law does not contemplate that its engineer shall either make or direct these surveys, but only examine the lands, and the maps and plans filed with the Board, there is a discrepancy between the regulations of the Interior Department and the state law. Because of this the position of the State Engineer has been at times embarrassing. He has a large responsibility under either plan. He has entirely too much when required to comply with both. Maps have been filed which did not conform to the regulations of the United States Land Office, nor was it possible to make them. The estimates of cost submitted have, in some cases, been so indefinite that it was almost impossible for the Engineer to form an intelligent opinion as to whether they were or were not reasonable, and where this has occurred it has resulted in much delay and involved increased labor and expense to both this office and the State Land Board. As the result of two years' experience I believe that the regulations of the United States Land Office contemplate the correct practice. The surveys and estimates ought either to be made by the State Engineer or by an engineer in the employ of the State. Whatever increased outlay this might involve would be more than offset by the greater accuracy of the results and the better understanding of the conditions which the State would thereby secure. This question will be again discussed in the recommendations of changes in this law.

ACKNOWLEDGMENTS.

I desire to commend the earnest and faithful work of the various division superindendents and the several assistants in this office. No private employer has ever had more efficient service than the State has received from these employes.

On behalf of the special commision to select State lands I wish to express our appreciation of the courtesies we have received from the State Land Board. The aid they have extended has materially lessened the labor and has removed all the unpleasant features of this service discussed in my last report.

Our thanks are also hereby tendered to the various railways of this State, for transportation furnished the State Engineer and, at various times, to his assistants. It has greatly reduced the contingent expense of this office and has enabled us to materially extend our ditch surveys and stream gaugings.

LIST OF PROJECTS EXAMINED BY THE STATE ENGINEER.

APPROVED PROJECTS.

NAME OF DITCH OR CANAL	SOURCE OF WATER SUPPLY	ACRES	LENGTH IN MILES	COST
Cincinnati Canal	Shoshone River	17,755.28	25	$ 75,000.00
Cody Canal	" "	24,562.58	32	150,000.00
Cody Enlargement	" "	1,867.36		
Globe Canal	" "	6,508.42	20	100,000.00
Uinta Canal No. 2	Black's Fork Creek	19,155.06	25	150,000.00
Black's Fork Canal	" " "	24,022.84	20	20,000.00
Fort Bridger Canal	" " "	5,168.94	8	10,000.00
Burlington Canal	Grey Bull River	28,969.13	18	150,000.00
Totals		128,009.61	148	655,000.00

PROJECTS HELD FOR EXAMINATION.

Omaha Canal	Big Horn River	50,000.00	50	
Powder River Ditch	Powder River	25,000.00	42	$ 175,000.00
Scott's Ditch	Hat Creek	240.00	2	1,600.00

PROGRESS OF IRRIGATION.

THE ARID LAND LAW; ITS SIGNIFICANCE AND RESULTS.

The most important measure enacted by the Third State Legislature was the law providing for the reclamation and settlement of the land granted the State under the Carey Act. It dealt with the State's greatest problem and has attracted more attention at home and awakened more interest abroad than any other law found in our statutes.

The evils growing out of the public land system gave this grant an importance it would not otherwise have had. The losses which have been incurred in building canals to water public land, the demonstrated impossibility of securing money to build additional works and the essential dishonesty of inviting investments to develop the State where the probabilities of financial failure were so great, all made the need of reform imperative.

There was another incentive to accept this grant. It gave this State an opportunity to show its capacity to wholly control local development and to demonstrate the advantages of having land and water under one control, instead of the divided control hitherto existing.

As Wyoming was the first State to accept the trust, and is the only State where lands have been segregated and contracts made for their reclamation, it is the only State where the success or failure of state control can be studied. This fact, and the important reforms in irrigation methods which it introduced, gives general interest to the results already secured and the lessons which its brief operation has furnished. It is appropriate, therefore, that a discussion of these matters should have first place in this report. It will be begun by a brief review of the agricultural conditions of this State, which will in a large measure control its operation and success.

WYOMING'S AGRICULTURAL POSSIBILITIES.

Wyoming has water enough and irrigable land enough to support, by agriculture alone, ten times its present population.

No State of the arid region excels it in the distribution and volume of its water supply, and no section of this country is better adapted to growing grain or raising stock. If these resources are rightly employed, the farmers of this State ought to, not only fully supply the home market, but successfully compete with eastern farmers in the markets of the world. A union of farming and stock raising is the form of agriculture best suited to our conditions. To make farming in this State a complete success, the irrigable lands and the grazing lands which surround them must be united. If this were done and the arid uplands utilized to supplement the irrigated valleys, one to furnish summer pasturage and the other the winter's food supply, it would make Wyoming one of the most attractive and prosperous stock raising districts on this continent. If so used, the valley of the North Platte would alone market more cattle than the whole State does at present, and the gain in taxable and productive wealth would be such as to end many of the perplexing problems which now confront us.

At present our situation is exactly the reverse. We are being swamped by a sea of unemployed resources and misused opportunities. Our rivers run to waste. Our irrigable lands are idle. We not only fail to supply the home demand for farm products, but are being impoverished by the drain on our incomes which their purchase abroad involves. An investigation, made four years ago, showed that we sent out of the State each year over a million dollars to purchase staple farm products which could and should have been produced at home. The amount of these purchases has not since been materially diminished. This money is wholly lost to us; not one dollar returns in reciprocal trade; farmers we buy from make their purchases elsewhere.

In too many cases the pioneer farmer is not prospering. Too few farmers is worse than too many. Ten thousand farmers would have better prospects than ten hundred. With more homes and increased production would come higher land values, lower railway rates, better stores and cheaper goods.

Stagnation is the farmer's worst enemy. With development would come new markets and, if not higher prices, an assured demand. It would bring more comfort and lower taxes, two things he is prepared to appreciate.

These were some of the conditions from which this grant promised timely, if only partial, relief. There were others equally important.

Small streams permit of cheap ditches. These can be built and small tracts of land reclaimed by individual effort. The homestead and desert land laws will suffice for this kind of irrigation, but they afford no security for the money required to build large canals nor any opportunity for co-operative enterprises or district organization in reclaiming large areas.

Irrigation in Wyoming is through small ditches. The 482 ditches surveyed this year averaged less than a mile in length. The limit of this kind of reclamation has been nearly reached. Excluding the North Platte River, there is not a stream in Albany, Laramie, Converse, Weston, Crook or Johnson counties, which is not fully appropriated, or would be if all the land under completed ditches were farmed. In all the other counties, except Uinta and Big Horn, every small stream which can be easily diverted is fully appropriated. During the past two years the number of applications for new ditches, from streams notoriously over-appropriated, has shown the scarcity of desirable opportunities for individual reclamation.

The limits of this kind af agriculture and the substantial end of its growth find us with neither people enough or taxable wealth enough to properly maintain a State government which embraces a greater area than the whole of New England. Although Wyoming is in the path of the Overland Trail, and for fifty years home seekers have forded the rivers and traversed the valleys of this State, *less than two per cent. of its area* has passed into private hands under the provisions of the agricultural land laws.* Some of these laws have been repealed, others made less liberal. The results of the first half century scarcely warranted a dependence on less liberal laws and less favorable conditions for another like period.

Meanwhile our large rivers were untouched. More water runs to waste in the Big Horn River in one month than is used in irrigation in the entire State during the year. The best land is along our large streams; the best conditions for profitable farming here prevail. Control of the land selected would enable the State to protect investments in irrigation works and to lend some aid to home-seekers reclaiming land thereunder. If this were done there would be a prospect that the great natural advantages of the State would lead to a part of the wasted water being used and some of the idle land settled and reclaimed. The statement which follows shows how far the grant has served to improve these conditions.

THE ADVANTAGES OF THE WYOMING LAW FROM THE INVESTOR'S POINT OF VIEW.

If land is worth reclaiming, this law makes ditch building a safe and legitimate business enterprise. This is a marked

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* Through the courtesy of Hon. E. T. Best, Ass't Land Commissioner, this office was furnished the following statistics of lands disposed of in this state:

1.	Patented under various agricultural land laws	1,102,720	acres
2.	Mineral lands patented	12,667	"
3.	Coal lands patented	34,383	"
4.	Certified to the state under grants made in the Enabling Act	231,758	"
5.	Lands patented to U. P. Railway	353,729	"
6.	Total patented area	1,735,258	"
	Grants to schools. (Sections 16 and 36.) Estimated	3,368,924	"
7.	Grant under Carey Act	1,000,000	"

The Auditor's report for 1895 shows 5,922,000 acres of land assessed. The greater part of this is the U. P. Railway Land Grant, which is taxable, and has an area of 5,056,000 acres. Altogether, less than ten per cent. of the state's area contributes to the support of either state or county government.

improvement over previous laws. Every aid which our resources and conditions permit has been extended to settlers, while every security, which control of the land gives, protects the money invested in irrigation works.

1st. It provides that no one shall file on the land segregated except actual settlers and water users. This reserves the land for share-holders in the canal, and prevents its absorption by non-residents through speculative filings, the prolific source of mischief under the public land laws.

2nd. It provides that each land owner must be a shareholder in the canal, but until these shares have been paid for the builders of the canal have control of its operation and maintenance and have the right to collect from water users a reasonable charge for this service.

3rd. The price of shares is fixed by the State before a dollar is spent on the work. This is an equal protection to both canal-builder and water-user. It relieves the first from the fear of an arbitrary establishment of rates by the county commissioners, which would confiscate this investment, and the second from an equally arbitrary and unjust increase in carrying charges, which would absorb the profits of his labor.

Wherever the question of water rates has been left to be fought out between those who supply water and those who use it, it has been a prolific source of litigation and ill feeling. It has entailed untold loss on both parties and done much to discredit irrigation investments and farming by irrigation. The provision of our law, which makes the State Land Board the arbiters of this question, is one of the most commendable features ever incorporated in an irrigation law, and marks a new and more peaceful era in the reclamation of the arid domain.

ITS ADVANTAGES FROM THE SETTLER'S POINT OF VIEW.

1st. Cheap land. Fifty cents an acre; less than one-half the price paid under the desert land law.

2nd. A State guarantee that there is water enough in the source of supply and that the canal has sufficient capacity to deliver it.

3rd. A secure water right. Every owner of a home under this law has a title to both elements which make it productive. There is no controversy as to whether the canal builder owns the water and can charge what he pleases, or, as to whether the land owner is its possessor and can do with it as he pleases. The water rights acquired under this Act belong to neither. They attach to the land reclaimed and are inseparable therefrom.

4th. An ownership in the canal, a voice in its management, security from oppressive water right charges, and relief from the perpetual mortgage which goes with separate corporate ownership of canals.

5th. Assurance that all the land is to be cultivated; that his home will not be an oasis in a desert of irrigable but arid land held by non-resident speculators; assurance that he will have the aid of a compact and settled community in securing local improvements, building towns, supporting churches and schools, instead of unimproved, unoccupied land, held by non-residents, to reap the unearned increment which comes from the increase of land values due to his and the canal builders' labors.

WHAT IT HAS ACCOMPLISHED.

1st. It has inaugurated the construction of the largest canal in the northern half of the State, the largest built in this State in ten years, and which promises to be the largest canal system in the State.

2nd. Although it is less than a year since the first segregation was approved, $80,000 have been spent on the Cody Canal alone. Fifteen miles thereof have been completed, 500 acres were irrigated this year, and water is ready for ten thousand acres now open to settlement.

3rd. The five remaining projects, approved by the State, would have slumbered indefinitely under public land laws. Of these, one segregation has not as yet been approved by the Interior Department;(1) one was approved less than one month ago; construction under one has been delayed pending a change in plans to secure a more economical distribution of water, which change has now been perfected, and some construction work done. Houses are being built under this canal (1) for the accommodation of settlers, and there is every promise of a large influx of farmers next spring.

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(1) The Cincinnati Canal from the Shoshone river.

When contrasted with the failures of former years, these results are full of encouragement. They are doubly gratifying because they have been secured in a time of financial disturbance and agricultural depression, without a parallel in the history of this country; which has almost paralyzed every department of industry and practically suspended investments in new enterprises. They have been secured in the face of opposition at home, due to a misunderstanding of the nature and purposes of the State law, and of delays growing out of the discrepancies between the State law and the national regulations. Outside of Wyoming these obstacles have made the grant thus far a dead letter. While four other States accepted its conditions, no segregations in those States have as yet been made.

OBJECTIONS TO THE NATIONAL ACT.

The Carey Act was the beginning of a rational arid land system. The State law accepting the grant made many salutary reforms in our irrigation laws; both are a step in advance; neither is perfect. Experience has shown where both may be improved, and the Carey Act has been benefitted by supplemental legislation enacted at the last session of Congress.

The original act seems to me to invite the following criticisms.

1st. Its operation is limited to ten years. This is too brief a period. Two and one-half years of that time have expired. As yet not a single canal has been completed. The reclamation of arid land is a slow process. The lands under a canal are not as a rule settled in a year or two years. The history of large works shows that ten years is none too long a time in which to carry an important project to completion. In another year or two this law will require amendment or its usefulness will be at an end because of inadequate time.

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(1) The Burlington Canal from the Grey Bull river.

2nd. It prohibits using the land as security for the money spent to reclaim it. This adds an element of risk which benefits no one, but is beyond question a manifest detriment. Just in proportion as the risk is increased, the profit must be enhanced. The more secure canal building can be made, as an investment, the cheaper works will be built for settlers and the better the conditions which can be made for their purchase. Added risk means increased interest rates, lessens the number of investors and tends in many ways to increase the cost of reclamation, all of which ultimately falls on the settler.

So many objections were made by those interested in this subject, that a number of bills were introduced in Congress to remedy this defect. All failed to become laws, but an amendment was incorporated in the sundry civil appropriation bill which seems to be an improvement on the original act, and our law should be amended to enable us to take advantage of its provisions. The full text of this is given below.

"That under any law heretofore or hereafter enacted by any state, providing for the reclamation of arid lands, in pursuance and acceptance of the terms of the grant made in Section four of an Act entitled 'An Act making appropriations for the sundry civil expenses of the government for the fiscal year ending June thirtieth, eighteen hundred and ninety-five,' approved August eighteenth, eighteen hundred and ninety-four, a lien or liens is hereby authorized to be created by the state to which such lands are granted and by no other authority whatever, and when created shall be valid on and against the separate legal subdivisions of land reclaimed, for the actual cost and necessary expenses of reclamation and reasonable interest thereon from the date of reclamation until disposed of to actual settlers; and when an ample supply of water is actually furnished in a substantial ditch or canal, or by artesian wells or reservoirs, to reclaim a particular tract or tracts of such lands, then patents shall issue for the same to such state without regard to settlement or cultivation: *Provided*, That in no event, in no contingency, and under no circumstances shall the United States be in any manner directly or indirectly liable for any amount of any such lien or liability, in whole or in part."

AMENDMENTS TO STATE LAW.

The following changes in the State law are respectfully recommended:

1st. A modification of Section 20 which will bring it in to conformity with the amendment to the national act. This will enable the State to obtain title to all the land segregated under a canal on its completion and will relieve both the State and settlers of the delay and labor of preparing and forwarding to Washington the individual proof of each settler.

2nd. The incorporation in the State law of a provision which will make the actual cost of canals a first lien against the land they water.

If this is done, Section 21 will need to be revised, in order that contracts for shares in canals may be simplified and improved.

A carefully drawn measure to secure this will be of service to both investors and settlers.

For the first few years after settling on arid lands a farmer has many outlays with less return than is received after the land is reclaimed. His success will be greatly aided by low interest rates and by extending the payments for his shares in the canal over a long period of time. The way to secure these aids is to leave no question as to ultimate payment.

3rd. As our law now is, there is no means of utilizing either the canal or the land it waters, if settlers cannot be had. This, I think, is unwise. A law which would give the owners of the canal, or the settlers under it, a right to use all the land not disposed of within a reasonable period after completion, on the payment of a low rental to the State, would remove the danger of enforced non-use which the present statute involves.

Some of the lands selected are inferior, either because of their broken surface, or the character of the soil. These lands will not be settled until the best lands under all of the projects have been taken up. The settlers on the reclaimed lands must maintain and operate the canal, and the expense of this will be nearly the same whether it supplies all the land segregated or only a portion of it. If, therefore, after a reasonable time, say five years after the canal is completed, the settlers already on the land, or the owners of the unsold shares in the canal, could have the right to lease the lands not occupied, they would be in a position to irrigate them without any additional expense in operating the canal, the State would receive a revenue therefrom, and these lands would be in a better condition to invite settlement than if left arid, as the law now requires them to be.

4th. Under our law there is no provision for the survey of canals and the segregation of lands except as proposals are received for their reclamation. The discrepancy between this procedure and that contemplated by the regulations of the Interior Department has been previously referred to. The desire to avoid expense was the reason for making no provision for the State taking the initiative in the selection of land to be reclaimed. This reason does not now exist. About 100,000 acres of land have been segregated. The fees from this, when disposed of, will amount to nearly $50,000. Unless this is expended by the State, it will have to be turned into the United States Treasury. It is believed that a legitimate use for a portion of this money would be to ascertain where the remainder of the million acres granted can be obtained, and to secure accurate data as to the character of the land and the cost of the canals to reclaim it. If this were done and the lands segregated, the State would not then be limited to a single proposal in securing their reclamation. The information furnished by these surveys could be given the widest publicity, and would, I believe, prove a stimulus to investment, and to the formation of colonies to reclaim land and create homes through co-operative effort.

During the past two years a large number of inquiries have come to this office asking for specific information as to the location of irrigable lands and the cost of reclaiming them. If surveys had been made and the lands segregated, the projects would have been in a condition to attract the immediate consideration of investors. Under the present system, there must be a long delay between the beginning of surveys and the time when money can be expended in construction. It is a system which invites the promoter rather than the investor. It was framed with the idea of lessening expense. Experience has shown that it fails to do this; that, on the contrary, to secure the data which the State Engineer and the Land Board must have, involves almost as much labor and as large an outlay as it would to make the surveys in the first place.

LAND LAWS FOR THE ARID REGION.

NATURE OF THE PROBLEM.

It must be kept in mind, however, that even if these laws were modified as suggested, they would still be inadequate and makeshift legislation. Any arid land law which fails to consider the grazing lands and provide for the conservation and use of our streams according to some comprehensive plan, must be regarded as unsatisfactory. Because we have made some improvement in an utterly inadequate and vicious land system is no reason for folding our hands and neglecting to promote further reform. As an enlightened and self governing community we ought to be content with nothing less than the best use of our resources. Our irrigation laws and our methods of administration ought to represent the best experience of our time and compare favorably with the best of other countries. That they do not at present must be admitted by every candid student of this subject.

DEFECTS OF EXISTING LAWS.

The fundamental defect of existing land laws is that they deal with the irrigable or arable land alone. Although the forest and grazing land, which cannot be reclaimed, comprise more than four-fifths of the arid domain, there is not a law which provides for either the preservation and renewal of our forest areas or the proper management or disposal of the grazing land.

The forest lands comprise more than ten per cent. of the State's area. About fifty millions of its sixty-three million acres is public grazing land. The preponderating part of our land surface and of our material resources, so far as agriculture is involved, is without management or protection. These lands contribute nothing to the support of state or county government in taxes or rentals, and so long as they remain subject to the present public land laws they never will. We are, therefore, maintaining a land system which invites destruction of our resources, and which, by withholding most of the land from taxation, places too heavy a burden on the holders of the remaining fraction.*

THE FOREST LANDS.

Two years ago fifty miles of the summit of the Big Horn Mountains was a sheet of flame. It raged with fluctuating violence for thirty days. In that time more timber was destroyed than had been cut by tie choppers and lumbermen in thirty years, and a greater injury was inflicted on the local water supply than will be restored by all the reservoirs built in the next quarter of a century.

This is not an isolated instance. Every year brings its story of repeated and accelerated destruction. As a result, streams once perennial have become intermittent. Their value for irrigation is impaired and many homes, already created, are threatened with ruin.†

The timber value of the forest areas is of secondary importance. Their chief and enduring utility is to conserve moisture for the valleys below. In many cases, with their destruction, irrigation ceases to be a problem and becomes an impossibility. The service of a river does not depend upon its yearly flow but upon its distribution. A mountain torrent in May, if followed by a dry channel in August, is of little value, yet this will inevitably result with the destruction of the shelter of our mountain slopes.

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* Of the less than six million acres of land taxed in this State about five million acres belong to the U. P. Ry. land grant.

† See letter in Cheyenne Tribune, Dec. 17, 1896. Reports of Water Commissioner, Dist. No. 1, Div. No. 1.

A distinguished national commission has recently been engaged in the study of this question and its recommendations will, doubtless, be of great value. The present forest reserve law is an unfortunate measure. By preventing the legitimate and harmless use of timber, it has aroused local antagonisms, while it does nothing to check destruction by fire.

It has proved to be an enlightened and profitable policy for many European nations to make forestry a state institution. It has paid where timber alone was the consideration. In the arid region, timber, climate and agriculture are all involved. No greater service could be rendered the arid states than to institute a system of police supervision of the mountain areas and to begin the training of a body of foresters who would not only preserve what is left but renew what has been destroyed. This need not be a tax on the national treasury, as the expense could be largely if not entirely met from the sale of such timber as could be disposed of without injury.

THE GRAZING LANDS.

In the right use of the grazing lands is to be found the solution of our most important agricultural problems. If the State could control these lands and lease them to farmers and stockmen in comparatively small tracts at a low rental, it would prevent the destruction of the native grasses, now taking place, reduce taxes, provide ample revenue for county and state government, increase the profits of farmers, put an end to range conflicts, which now threaten the peace and prosperity of many communities, and place the stock interests of this State on a sound and enduring basis. The present open range does none of these things, and so long as continued renders the accomplishment of many of them impossible.

Four-fifths of the State is grazing land. It has no agricultural value except for its pasturage. These grazing lands are now an open common; those who occupy them do so without payment of rent or fee. They have no means of securing exclusive control of any portion, except through force, and hold them by such an uncertain tenure that there is no incentive to their preservation and improvement, but on the contrary a constant temptation to make the most of the present without regard to the damage done, or to ultimate consequences. No more destructive or improvident system can be imagined. So long as there is no legal control of the grazing land not a house will be built, nor a well dug, nor a reservoir planned to improve any part of it. There will be no increase in value but a constant decrease in its productive capacity.

The open range, and the institutions it created, had an important and useful place in the transition from savage to civilized life. Ten years ago range stock paid half the taxes of this State, but since that time there has been a startling shrinkage in values, and it has been more and more an obstacle to our agricultural growth and a disappointment and source of loss to stockmen themselves. We have now reached a time when we should seriously consider whether these primitive institutions should conform to changes in other directions.

The open range industries carry within themselves the seeds of their ultimate destruction. Success depends upon sparse population and a partial regard for range rights. With immigration and settlement comes destructive competition for the enjoyment of its privileges. Every farm reclaimed curtails the free pasturage and adds another individual to dispute the right to what remains. This results in overstocking the range and ultimate impairment or destruction of the pasturage it affords.

The desert wastes of California, Nevada and southern Utah, the lessened growth of grasses in Wyoming and other arid States are warnings whose significance cannot be mistaken. The destruction of free timber on the mountain is not more certain than that of free grass on the plain. A free wood lot in New York City would be no more of an anomaly than will be a free pasture in this region within the next quarter of a century.

In 1886 the assessed value of cattle was $14,651,125. In 1896 it was $3,732,558, an average loss during the past ten years of over a million dollars a year. They have diminished in numbers from nearly nine hundred thousand in 1886 to less than three hundred thousand in 1896.* There has been an increase of two million dollars in the assessed valuation of sheep, which partly offsets the eleven million dollars shrinkage in cattle, leaving a net loss in the valuation of range stock of over nine million dollars, or nearly a million dollars a year.

All this shrinkage has been in range stock. Irrigated land supports more cattle than it did ten years ago. There are less cattle because there is less grass. In many parts of the State ten acres will not furnish the feed supplied by one acre a decade ago.

That the uncertainties and losses, which go with lack of control on the open range, more than offset the advantages of free pasturage is the opinion of many of the leading stockmen of this State. It is confirmed by the applications to lease lands, filed with the State Land Commission, by many of the men who have had the largest and most varied experience in the open range industries. These applications have been filed by both sheepmen and cattlemen, and one of our most successful sheep-raisers now leases 10,000 acres of state land. At the last meeting of the commission another asked for the selection of 90,000 acres of land, for which he agreed to pay an annual rental of five cents per acre, stating that he preferred to pay the State $4,500 a year, for the security which exclusive control would give, rather than continue the risks which the free range involves.

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* See Statement 13, pages 37 and 38, Report of State Board of Equalization, 1895.

In more than half of this State the profits of farming depend upon an opportunity to combine the use of the grazing and irrigable land. Farms remote from railways and where the altitude restricts products to hay and root crops, can only be profitably cultivated to produce winter feed for stock. To engage in this business, control of a summer range is just as indispensable to success as possession of a water supply. There is no assurance of this under present conditions. The settler may improve his farm in the belief that this privilege is secure, but so long as exclusive control has no legal sanction it must remain a subject of controversy. The gravity of the conflicts thus made possible is serious and their ultimate consequences, if not averted, disastrous. Within the past year there has been open warfare between the settlers and cattlemen of Colorado and sheepmen of Wyoming, between the range stockmen of Utah and settlers of this State, and between settlers and non-resident stockmen in nearly every arid state.

Wyoming is a common feeding ground for flocks and herds owned in other States and which pay taxes elsewhere. Montana cattle are unloaded at Orin Junction, and Nevada cattle feed on the ranges of Laramie Plains, to the manifest injury of the State's taxpayers.

The newspapers of this State report that 400,000 sheep, owned in Utah and paying taxes in that State, were pastured this year in western Wyoming. The same thing occurs on our northern border. Thousands of sheep owned in Montana and paying taxes in that State are pastured in the winter in the Big Horn Basin. Other thousands of sheep owned by non-residents are driven across this State each year to the winter feeding grounds of Nebraska. These nomadic flocks pay no taxes and give no consideration to the needs of settlers. The surveys along Black's Fork, made by this office, showed the distress which has been brought upon the farmers of that section through these conditions.

As a member of the Special Commission to select state land for Wyoming, I have been compelled to recognize the influence of grazing lands on the progress and success of irrigation. The Commission is in constant receipt of letters from settlers saying that the right to lease a part of the contiguous grazing land, at the high rate of five cents an acre, would double both the value and profits of their farms. The applications now on file aggregate nearly one million acres and there is no reason to doubt that, if the State could lease all the land, its revenues from rentals would be greater than the present income from taxes.

The march of settlement is forcing an evolution. We are compelled to take some action which will preserve this important asset for our own settlers and taxpayers. The members of the legislature are well prepared by experience to formulate measures of reform. The statements made below are intended to put the matter in concrete form rather than to advocate any detailed plan.

1st. The grazing lands should be leased, not sold. The limits of irrigation are not yet fixed, and public control should be retained until further experience is had as to their proper ultimate disposal.

2nd. Make the leasing privilege an aid to reclamation, and a means of enhancing the security and profits of farming.

3rd. To do this, give to each settler and cultivator of 160 acres the right to lease a certain area of grazing land, contiguous to his home if possible, if not, wherever it can be had. Give to the cultivator of less land the right to lease a proportionately less area, but fix the maximum area which any individual can lease.

This will tend to encourage small farms, since the cultivator of 1,600 acres could lease no more than the cultivator of 160 acres.

4th. Make the annual rental a fixed sum and prohibit competitive bidding. Make the rate low to enable those leasing lands to improve them and to profit thereby. Five cents an acre is believed to be too high a rate. One cent an acre is the rate recommended.

5th. The maximum area leased by one individual should be based on the ratio of irrigable and pasture land. Four sections of grazing to 160 acres of cultivated land is believed to be the proper proportion in Wyoming. This would give each cultivator of 160 acres the use of 2,560 acres of pasture land for an annual rental of $25.60. Such a system would absorb only a fraction of the grazing land, less than one-fourth at this time.

The area of grazing land leased would only be extended as farms multiplied. The lands not leased would remain as they now are. The settler would be protected and those using the open range would be freed from conflicts. The transition from our present condition would be too gradual to be injurious. Every irrigated farm having this grazing land attached thereto would be increased in value and many would be worth double what they are to-day without it. The stimulus to immigration would be correspondingly strengthened and the value of investments in ditches and canals proportionately enhanced.

It would, I believe, prove a preliminary step to leasing all the land, as the day is not far distant when every stockman will be as desirous of leasing his range as the farmer now is to control the contiguous pasturage.

At present the State or Nation derives not one cent of revenue from the use of these lands. *If leased at one cent an acre, the income to the State of Wyoming would be half a million dollars a year.* It would lead naturally to an era of immigration and improvement which would afford employment to labor and vitalize many industries. Large areas now too far from water to have much value would be supplied. Windmills would be built, reservoirs constructed and rotation in pasturage made possible. The powerful force of individual interest would be turned toward the development of these arid plains.

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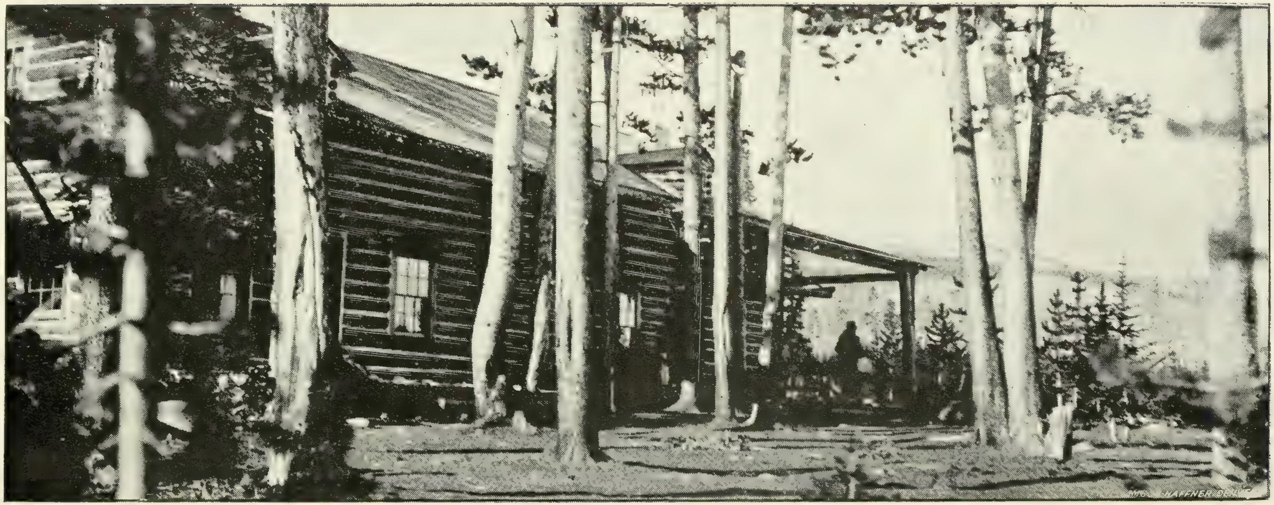
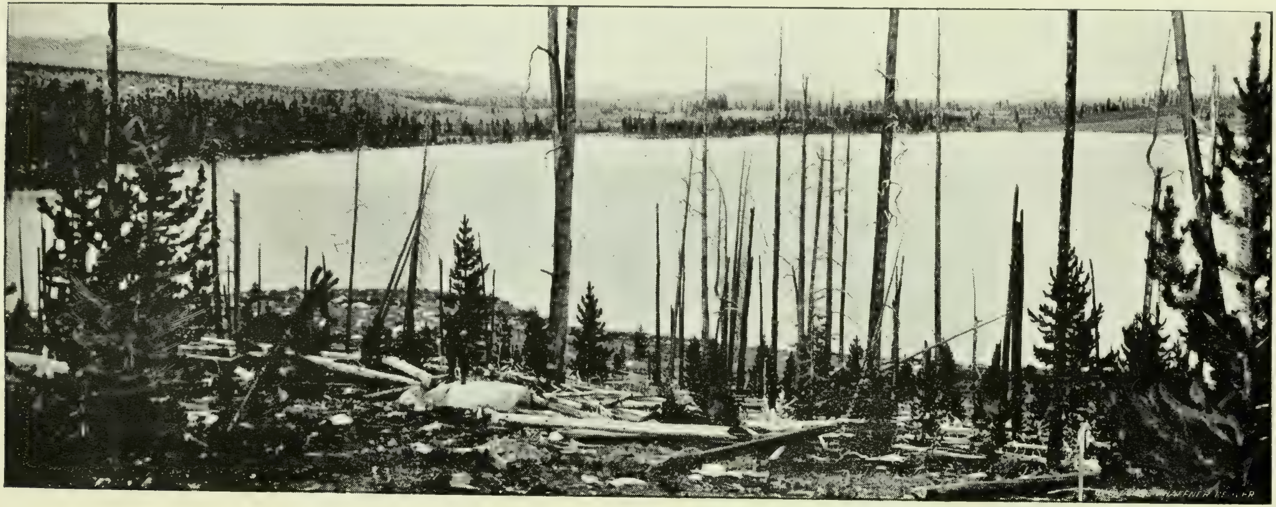


DOME LAKE CLUB HOUSE.

The Dome Lake Club was organized for the improvement of Dome Lake Reservoir, and the creation of a health and pleasure resort in the heart of the Big Horn Mountains. The Club House is the center of a group of rustic dwellings and hunters' lodges.



DOME LAKE RESERVOIR.

Dome Lake is a morainal lake situated at an elevation of over 9,000 feet above sea level. It has been improved and enlarged to serve as a fishing resort for the Dome Lake Club, and to store water for irrigation purposes.

OF THE INOIS

THE ADJUDICATION OF RIGHTS TO WATER.

THEIR CHARACTER AND LIMITATIONS AS DEFINED IN THE RULINGS OF THE BOARD OF CONTROL.

When the reclamation of the Arid West becomes a matter of history it will be seen that many of the arid States have wholly ignored the experience of other irrigated lands, and have enacted laws and established customs which thorough and repeated trials have shown to be utterly pernicious and destructive.

History will also show that the experience of the arid States has resulted in an evolution in which legislation often fails to conform to the growth both in ideas and practices of water users, but on the contrary are often directly opposed thereto; that where legislation has been based on our own experience irrigation laws conform closely to the institutions of irrigated Europe, but that where they have been framed without regard to such experience they are not 'only inferior to the laws of other lands but to the customs of our own, and instead of promoting irrigation are a menace to its interests. It also frequently occurs that courts, which deal only with isolated features of the subject which happen to be presented in a particular case, add to the complications and uncertainties which inadequate laws have created.

This situation is not surprising. Water laws for arid lands must differ widely from those for humid lands and from the past traditions and jurisprudence of this country. All who deal with this subject must adjust themselves to new conditions, and in bringing this about actual experience is the most rapid and effective educator. The man who studies its problems from day to day learns its conditions more rapidly than the man who deals with it at occasional intervals and from a standpoint and environment not entirely favorable to its mastery.

These are the facts which gave to the creation of the Board of Control its significance and value. Whatever may be the ultimate outcome of its labors, its creation is in accord with the best experience of the irrigation states of Europe.

In Spain and Italy the best administration of irrigation laws and most satisfactory adjudications of water rights have been had from special tribunals having an intimate acquaintance with irrigation and dealing solely with this question.

At the outset of its labors the Board has had to deal not only with conflicting interpretations of our laws but with problems which no law can prevent being both perplexing and difficult.

It is easy to fix the boundaries of land and to mark these by monuments which shall be enduring and known to all men. The nature of a land patent is simple and the kind of title it confers easily understood, but it is otherwise with rights to the river which flows past the farm and determines its value. We have here to deal with a form of property which exists to-day and is gone to-morrow. To regulate the division of a common and fluctuating supply in such a way that the farmer may be assured that his portion of the snows which fall on distant summits will find its way certainly and surely to his fields before the stream runs dry, and that he shall have his proper share and others not suffer unwarranted loss, is one of the most complex administrative problems which has ever taxed the mind of man. We can fix no boundaries to ownership in the stream nor can we give a patent to the snows which may or may not fall next year, nor to the waters which flow to-day and are gone to-morrow. The stream we deal with to-day is not that of yesterday, and the supply which meets the demands of this month will not be the same next month or next year. Yet the waters are of value and must be divided. The irrigated home is important and its productiveness must be made secure, not for this year only, but for next year and for all time.

The most important ruling of the Board of Control has been that limiting rights to water to the use by which acquired and the place where acquired and refusing to recognize private ownership of water or a right equivalent to such ownership. This action of the Board was fully discussed in the Engineer's Report for 1894.* Because this action is not in accord with the decisions of some of the other arid States its correctness in this State has been questioned. As this is a matter on which the State Engineer has to rule repeatedly, and as the events of the past two years have made it increasingly prominent, it seems necessary to again discuss this question in order that his position, and the effect of the rulings of the Board of Control, may be clearly understood and appreciated. A brief review of the principles governing these decisions, and their application in a few of the cases decided, will, therefore, be given:

The success of water laws depends upon their stability. To secure this it is necessary that rights shall not expand as the control of water becomes valuable. It is also necessary that in our administration of water laws we give as careful consideration to the right of the last appropriator as is generally given to that of the first. Where all the water of a stream is used, anything which augments earlier rights robs later ones. A careful study of the laws of many States and of the decisions of their courts will show that this fact has not been properly considered, but that the tendency has been to augment the importance and unjustly extend the control of early priorities.

It will also show that the rights of the public in streams have to some extent been disregarded, and that the liberality, which permits an appropriator to take and use this public property without cost, has not been appreciated, but on the contrary it has been perverted to mean an entire surrender of public interest therein, so that the individual who has acquired a right to use water to irrigate a field has come to believe that he owns that quantity of water whether he irrigates the field or not. He has also come to believe that because he has used the water to irrigate the field one month of the twelve he has a right to control and dispose of it for the other eleven months as well.

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* Limitations of Rights to Water, pages 33 to 48 inclusive.

RULINGS OF THE BOARD.

The Board has ruled that appropriations of water cannot be sold but are inseparable from the place and use where acquired. The correctness of this ruling has been questioned. It is admitted that if the State, the unquestioned owner, were to sell a stream to the highest bidder and authorize the purchaser to exact tribute from users the transactions would outrage public sentiment and seriously menace our prosperity and development. Our laws, therefore, make no provision for the sale by the State of water rights. Only those prepared to beneficially use water and those who have so used it can obtain rights in our streams by appropriation, but it is claimed that having once been beneficially used and thereby appropriated this limitation is abandoned and the appropriator to a use may make an unconditional sale of the volume so appropriated, and that the situation and intentions of the purchaser are not material factors, but by such purchase he gets a title free from all limitations.

According to this remarkable doctrine we can accomplish by indirection what our law admittedly does not permit to be done directly. The appropriator from the State can give a better title than he receives and can be safely permitted to make of water a speculative commodity, although the State, its original proprietor, has no such right.

The Board of Control has ruled that an appropriation of water does not give title to any specific quantity but only to such volume as is necessary to accomplish the use by which and for which the appropriation was acquired. The correctness of this ruling has been questioned.

The language of certificates of appropriation is indefinite as to this limitation and many believe that where such certificate has been issued the appropriator of one cubic foot per second for irrigation has a right to claim and control the volume specified during every month of the year; in the non-irrigation as well as during the irrigation months. Such a conception is as devoid of common sense as it is of a proper regard for the spirit of our laws and the rights of late appropriators. It ignores alike the appropriators' needs, the fluctuations in the flow of our streams and the fact that the use by which the right was established affords no basis for such claim.

To illustrate this: Certificate of appropriation No. 424 recites that the appropriator has submitted proof for the reclamation of 460 acres of land and has appropriated thereby 6.57 cubic feet of water per second of time. This is an allowance of one cubic foot per second for each seventy acres irrigated, which is the maximum allotment permitted by our law and one which the Board, in the absence of any specific information as to the actual maximum volume used, has made the basis of all irrigation appropriations.

As I write this, the proof on which this certificate was based is before me. It says that water had been used and is needed from April first to August first, or only four months of the year, *and that water has never been used during the remaining eight months.* It is manifest, therefore, that a right to water during two-thirds of the year has never been established by use nor is such right needed by the appropriator. This proof differs but little from all the proofs for irrigation, and the Board can see no reason for placing an interpretation on the right which will permit it to be augmented to include control of the stream during the non-irrigation season. If this should be done, and each right for irrigation be construed to mean a continuous maximum flow, it would destroy the value of two-thirds of the appropriations in this State. This proof states that after July first there is each year a scarcity of water in the stream, yet the priority established thereby is number thirteen, while there are in all forty-four appropriations from that stream. The thirty-one inferior appropriations are of value, and the land they irrigate has been reclaimed, because the actual use of water in irrigation has been neither continuous, uniform nor equal in amount to the maximum which the law permits.

Adjudications of rights usually occur soon after reclamation begins. It has been fully established that the requirements of land at this period are much greater than after it has been irrigated for a number of years. The law of Wyoming, permitting a maximum allowance of one cubic foot per second for each seventy acres irrigated, is intended to cover this maximum requirement and is fully equal to or above what is needed. This augmented need, to overcome the aridity of centuries, continues only for a brief period. The same volume of water will suffice to irrigate two or three times as much land after it has been cultivated a few years. It must also be borne in mind that this maximum volume is needed during only a limited portion of the year, not in any case to exceed two months, and in the great majority of cases it will not exceed thirty days.

This increasing duty of water is not the result of care or economy on the part of the irrigator, but is the inevitable and uniform working of natural forces. There is no reason, therefore, for giving to prior appropriators the control of the surplus and permitting them to make it a speculative commodity. Justice to the public, and a proper regard for the extension of irrigation, require that water rights for irrigation should be restricted to the actual needs of the land where acquired, and that the surplus, which increased duty of water makes available, should be subject to appropriation on the same liberal terms as were given to the first rights on the stream.

The significance of the increased duty of water, which comes with its continued use, is too important to be disregarded. The generally accepted mean duty of water in Colorado in the beginning of irrigation was one cubic foot per second for each fifty-four acres watered. It now varies from two to six times this area.* If, therefore, we are to say that an appropriator is entitled to a definite volume of water, and to the continuous flow of that volume, and disregard the greater service which this will render as irrigation becomes better understood and the subsoil saturated, we are conferring on every early appropriation an expanding right and inflicting a corresponding loss on the public and on subsequent appropriators.

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* The measurements of the Territorial Engineer at Wheatland in 1889 showed that the mean duty in the irrigation of oats for the four months of the irrigation season was one cubic foot per second for 93.8 acres, and the mean duty of water in the irrigation of potatoes was one cubic foot for 229.5 acres. (Territorial Engineer's Report for 1889.)

The experiments of the Professor of Irrigation Engineering at the Agricultural College of Colorado showed that on lands long irrigated the mean duty varied from 112 to 195 acres for one cubic foot per second. (Bulletin No. 22, Agricultural College of Colorado, page 30.)

The measurements of the State Engineer of Colorado for 1896 showed that the mean duty of water in irrigation of the lands watered from Boulder Creek was a little over 300 acres for one cubic foot per second. In the Big Thompson district one cubic foot sufficed for the irrigation of 350 acres. (Records of the State Engineer's office of Colorado.)

It is all the more important that these facts should be borne in mind because lack of means to properly investigate the actual needs of irrigated land has prevented a proper limitation of the allotments in certificates of appropriation.

We have been compelled to establish priorities in advance of any complete or systematic investigation of the volume used. The poverty of the State has prevented such investigation and our crude methods of distribution and use prevent a proper determination of ultimate possibilities. Our laws have had to be adjusted to these conditions. This makes them seem extremely primitive when compared to the irrigation codes of European countries.

There can be no question that increasing experience and more adequate means for the administration of our water laws will result in the adoption of regulations similar to those in force in Italy and Spain, under which rights in winter as well as in summer are established and the diversions are in exact accord with the economical needs of users. It is important, therefore, that we recognize no law or custom which will make this subsequent regulation impossible.

Under the rulings of the Board of Control the conditions which govern the acquirement of a perpetual right to the use of water must limit its subsequent exercise. In other words such a right is simply a perpetual license to take and use this water for a certain specific purpose in a certain definite place. Under these rulings water appropriated to run a mill is restricted both to that purpose and to that mill. The owner of the right cannot use it to run another mill, nor divert it to the irrigation of land. No transfers of appropriations to other locations or other purposes have been recognized, but, on the contrary, it has been held that rights to water for irrigation *belong neither to the canal builder nor the land owner, but* *attach to the land reclaimed and are inseparable therefrom.*

The Board of Control has applied these limitations to all appropriations for irrigation whether the right was acquired prior to the adoption of the State Constitution or subsequent thereto. Water Commissioners have been instructed in case of scarcity to reduce the volume diverted to the actual amount applied to the beneficial use stated in the original certificate, without any regard to the volume designated in such certificate.

While these rulings have had the support of the great majority of water users and their necessity is becoming increasingly apparent, there have been a few instances where their correctness has been contested. Those who disagree with the Board's position hold that these limitations constitute an illegal restriction of vested rights. This opinion is not so much due to the injury which these limitations might inflict in any particular case as to the fact that they are contrary to the judicial decisions of several other arid States. That this is true is admitted, but the radical difference which exists between the water laws of Wyoming and those of the States where these decisions prevail lessens the importance which would otherwise attach to these precedents.

The State Engineer and Board of Control disclaim any authority or desire to make law. They simply hold that the limitations imposed are necessary to the conservation and best use of our streams and are indispensable to the protection of the rights of actual irrigators. That while such limitations were not made mandatory by territorial laws they are in harmony with the spirit and purpose of these laws and are fully warranted by their provisions.*

No question has had more careful or conscientious consideration. It has only served to confirm the belief that these rulings are correct, as added experience has served to show their necessity and importance and to intensify the conviction that a change to the doctrine of private ownership of water or a right of use equivalent thereto, which prevails in some of the arid States, would be nothing less than a public calamity. The users of water should study this question and inform themselves of the consequence of a departure from the principles which now govern the administration of our streams. As an aid to such investigation a brief review of a few of the cases involving these questions will be given, with the reasons for the decisions made and the results which, in my judgment, would follow the adoption of a contrary policy.

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* See Sec. 29, Chap. 61, Session Laws of 1886.

SALE OF SURPLUS WATER AND TRANSFER OF AN APPROPRIATION TO OTHER LANDS.

Soon after the adjudication of rights to water from Little Goose Creek, in Water Division No. 2, an inquiry was made of the State Engineer as to whether he would recognize the sale of one of the priorities thus established and the transfer of a portion of the water right to other lands than those described in the certificate. Accompanying this inquiry was the following statement of facts:

That, subsequent to the adjudication, the irrigation of contiguous lands lessened the volume which had to be diverted to irrigate the land described in the certificate, and a measurement showed that only a fraction of the appropriation was being used. The comparatively early priority made this water right valuable and the inquirer desired to purchase the surplus if he could legally do so.

The intending purchaser proposed, if the sale were sanctioned, to file on a tract of public land, to construct a new ditch and use it to reclaim land then arid.

The State Engineer ruled that under the provisions of Sec. 25, Chapter 8, Session Laws 1890-91, and Sec. 1359, Revised Statutes, the right was not transferable to other lands and that in no case could there be a surplus. That if all the appropriation was not beneficially used, for the purpose designated in the certificate, the remainder belonged to the public and subsequent appropriators were entitled to its use.

This ruling was accepted as final and has since governed the distribution of water from the stream. Each year has emphasized the necessity of its maintenance. As the subsoil of the land first irrigated has become saturated less water is needed, until under some of the earlier ditches one second foot of water will now irrigate twice or three times as many acres as were allotted in the adjudication.

When priorities were established the stream was regarded as being notoriously over appropriated. For several previous years there had been serious losses of crops. Late priorities were held of little value because the total volume allotted was twice the discharge of the stream. Since that time the losses have diminished each year, and, with a continuation of the labors of superintendent and water commissioner to promote system and economy in the use of water, there is every reason to believe that in a few years all the land described in these certificates will be assured an adequate water supply. No one has been injured, since every appropriator has been protected in his right to use water for the purpose for which appropriated and by which the priority was acquired. The surplus, which has come from better methods and lessened needs, has not been wasted; it has all been used to make more fertile the fields of later appropriators, the value of which has thereby been increased and the homes dependent thereon made more secure. It has diffused the bounty of our streams among more people and relieved them from the curse of litigation, which attends every attempt to make water rights a salable commodity.

The sanction of this projected sale would have taken the water away from homes already created to apply it to sage brush and cactus. It would have conferred an additional speculative value on early priorities but would have destroyed the orchards and gardens of later users. A law which will make each appropriator the owner of the volume allotted in the Board's order and confer on him the right to sell what he does not use will give the first thirty appropriators on this stream control of its waters. Under such a law, the last thirty-seven appropriators could take their choice between abandoning their homes or buying the water needed, after the middle of June, from the fortunate possessors of the early rights and of the State's improvident liberality.

SALE OF WATER FROM RATTLESNAKE CREEK.

Pass Creek, a tributary of the North Platte River, in Water Division No. 1, has been a prolific source of water-right controversies. Although as a stream it is insignificant, as an agency in creating problems to perplex the administrators of our water laws it holds the record.

When measured in June, 1891, the combined discharge of the main stream and its tributaries was only 46 cubic feet per second, a volume inadequate to supply the 8,721 acres of land irrigated therefrom; hence there has been a shortage in the supply and partial failure of crops each year since the Engineer's office was created.

When water is scarce it becomes valuable. The necessities of users give added importance to its control. The owner of an unrestricted right to twenty cubic feet of water per second of time, with authority to control the place and manner of its diversion, would have every ranchman in this valley as his dependent.

It was a natural result of these conditions, therefore, that the most important attempt to secure ownership in a stream by purchase, rather than by use, should have occurred here. The attempted transfer, to be described, occurred on Rattlesnake Creek, the principal tributary of Pass Creek. This stream, when measured in June, 1891, had a volume of twelve cubic feet per second. The survey made at that time showed that 1,180 acres of land were being irrigated therefrom and a fraction over one cubic foot per second was being diverted away from the stream's drainage for domestic uses of towns along the Union Pacific Railway. The water supply was, therefore, about equal to the economical requirements of the users dependent thereon, and as each user had taken what he needed and no more, there had been prior to the adjudication no complaints of scarcity or controversies over distribution.

At the adjudication, however, an ownership in the stream through purchase, apart from any supporting claim of use, was set up, and the Board had to rule upon its legality.

The evidence submitted in behalf of this claim showed that in 1886 Albert Crone filed in the County Clerk's office of Carbon County a statement in which he claimed to have appropriated 27.22 cubic feet of water per second of time from Rattlesnake Creek, the claim stating that the appropriation was made in 1881. In the same year that Crone filed this statement, McDonald brothers filed a similar statement claiming to have appropriated, in 1885, 1,080 *inches* of the water of this stream, and at a later date M. R. McDonald filed a statement claiming to have appropriated through a different ditch 11.09 cubic feet of water per second. The Rattlesnake Creek Water Company also claimed an appropriation, by virtue of the construction of a pipe line, of two cubic feet per second.

The evidence showed that the above named water company, in addition to its claim to an appropriation under the laws of the Territory, had purchased the following rights:

From Crone as much of his appropriation as its pipe line would divert; from the McDonald brothers enough water to fill the pipe a second time, and from M. R. McDonald enough to fill it a third time. The conveyance of these rights was in each case by deed which set forth that each party selling the same had acquired ownership of water through filing a claim to water under the laws of the Territory of Wyoming, *and had thereby appropriated the same.**

The water company paid for these rights in all $3,600. The validity of the purchase was, therefore, a matter of some moment to both buyer and seller, but the right to make such transfers was of vastly more consequence to the actual users of water on the stream.

The first question to be considered was whether or not the various parties selling these rights acquired, through filing these statements, such ownership as would enable them to make a valid conveyance of the public waters of the State. If they did then the first appropriator, Crone, showed great self-denial in limiting his claim to only twice the quantity of water the stream carried. His claim was an *ex parte* statement, recorded without any investigation of its reasonableness, or restrictions on the volume thereby appropriated. It would have cost him no more to have claimed, in the same statement, all the water of the North Platte River.†

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* "That whereas the said party of the first part, on the 9th day of October, A. D. 1888, filed his Statement of Claim to Water under the laws of the Territory of Wyoming, *and thereby appropriated* from the waters of Rattlesnake Creek, Carbon County, Wyoming, 11.09 cubic feet per second of water." (Extract from Quit-Claim Deed of M. R. McDonald to Rattlesnake Creek Water Company.)

† There is one statement recorded in Carbon County which claims 60,000 cubic feet of water per second of time, about 10,000 times the quantity which the stream ever carries and more than all the streams in the county could supply.

If this statement constituted an appropriation, and Crone thereby acquired the right to 27.22 second feet from a stream which, when measured, only carried 12 second feet, then the subsequent claims of the McDonald Brothers and the Water Company were of no effect because there was no water left to be appropriated. If Crone acquired, through his statement, a right not only to use but to sell the stream, the use of its waters after his statement was filed was only through sufferance and subject to interruption whenever he could find a purchaser for his surplus.

On the other hand, if filing the statement did not establish a right to the volume claimed, but, on the contrary, was only a step in the proceeding, required under the territorial law, to acquire such right, then he had no more authority, in advance of an adjudication, to convey by deed two cubic feet of water than he would have had to convey his whole claim of 27.22 second feet.

The proof, submitted to the Board of Control, showed that Crone had only irrigated 77 *acres of land* in 1881, and that there was no increase in the amount of water used until after the enlargement of his ditch in 1884. The proof of McDonald brothers showed that they had beneficially used only a small fraction of the water claimed, in one case less than the volume they purported to have sold.*

The Board ruled that these statements did not constitute an appropriation. On the contrary it requires the diversion and beneficial use of water to complete a right to use water and that until the extent of such use had been determined, either by a judicial decree, as provided for under territorial laws†, or by order of the Board of Control under the provisions of the State laws‡, both Crone's and McDonald's rights were inchoate, and not of a character to authorize or make valid a conveyance by deed of any volume of water or any specific right in the stream.

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* The aggregate claims from Pass Creek and tributaries were as follows, stated in the units employed in these statements:

323.38 cubic feet per second.
1,500 miners' inches.
1,104 inches (kind not designated).

Considering the latter as miners' inches this was over 600 feet per second, or more than ten times the volume which the stream furnished in 1891, and many times that required for the land under ditches.

† Secs. 1339 to 1346 Rev. Stat. 1887.

‡ Chap. 8, Session Laws 1890-91.

To have held these transfers valid, or to have recognized the right of the water company to control the volume purchased, would have been to recognize the right of said company, or any purchaser of water, to control our streams without using the same. The water company claimed the right to all the water its pipe line would convey by reason of its construction and the application of the water diverted to beneficial use. Manifestly this was all that had been used or could be used unless additional means of diversion were created. The additional volume, to which they claimed a right by purchase, had not been applied to any beneficial use since its purchase and could not be so applied by them. They could only have held it as a reserve or sold it again to the users of water on the stream. In either case, it would have given a non-user control of the stream and have made the cultivation of many of the ranches, already irrigated, depend entirely upon its final disposal.

The Board held that the transfer was void, and further, that such attempted conveyance had operated as a surrender of all claim to priority of right by the parties attempting to sell the same.

The authority of an appropriator to surrender his right to the use of water or to take an inferior priority for such right is unquestioned, but, in case of such surrender, no one can be injured. On the contrary all subsequent appropriators are benefitted. It neither disturbs the order of the priorities, acquired through use, nor impairs in any way the principle that rights to water can only be acquired or maintained through beneficial use. But the right to sell a priority creates an entirely different, and antagonistic, basis for the control of our streams.

To have sustained the validity of these sales would have worked a revolution in the conditions which had governed the improvements made and rights acquired by subsequent users. The appropriations made by Crone and the McDonalds were for irrigation, the claims they filed stated that the water was for the ditches named therein and for the irrigation of specific areas of land. The use of water in irrigation is not continuous or uniform. The period when the maximum volume required can be profitably used does not on that stream exceed two months, and this occurs at a time when the supply is most abundant. During the remainder of the irrigating season the demand is both intermittent and limited, while for about one-half the year there is no use whatever. In addition a large percentage of the water they diverted had returned to the stream as waste or seepage and had been re-appropriated and re-used by irrigators below.

Practical irrigators know these facts, and base their investments in ditches and lands upon them. Appropriators on the stream below, knowing how much land Crone and McDonald were irrigating and believing that the rights acquired thereby would be restricted to these lands, built other ditches, reclaimed other lands, created additional homes. They were enabled to do this through the use of seepage water and through securing the entire flow after the prior users above had watered their fields. The diversion contemplated by these sales would have worked an entire change in these rights. It would have changed an intermittent diversion to a continuous one and made the demand as great when the stream was low as when at its flood. Instead of a return of one-third to one-half through seepage every gallon diverted would have been lost to users on the stream below. In effect, instead of the transfer of an existing right, it would have resulted in the creation of a far more extensive and injurious right.

The order of the Board of Control sustained the principles set forth at the beginning of this discussion. Each right was restricted to the place and kind of use by which it was acquired. It has been in force over four years and water has been distributed under its provisions for five seasons. There have been no complaints of injustice, no appeals to the courts. It has worked no hardship to any beneficial user, but on the contrary early priorities have had all the water needed and later ones have realized the benefits which have come from the rigid exclusion of speculative control.

TRANSFER OF AN APPROPRIATION TO OTHER LANDS.

In the determination of rights to water from Pass Creek, Charles Hardin filed proof of the reclamation of certain lands which had been irrigated by him for several years. A certificate of appropriation was issued in accordance with this proof, describing the lands to which the right attached. At the time of making this proof, Hardin did not own these lands and subsequently lost control thereof. He then applied for an order transferring the appropriation to other lands, which he owned.

The Board refused to make such transfer, basing its refusal on the ground that the right attached to the land reclaimed rather than to the person of the appropriator, and that the water laws do not contemplate the creation of perambulating priorities. It was refused on the further ground that the transfer was against public policy and an injury to the rights of subsequent appropriators. The land where the water had been used was reclaimed. It had ceased to be a sage-brush desert and was a productive farm. The water of the stream is over-appropriated; no new rights are being granted and no more water can be had. To withdraw this right would be to cause a reclaimed farm to return to its original arid condition. It would destroy the value of its improvements and end the existence of a cultivated farm to permit the creation of another in no way superior.

SALE OF AN APPROPRIATION ON LITTLE HORSE CREEK.

In 1891, the Board of Control by an order fixed the priorities and amounts of appropriations from Little Horse Creek, in Water Division No. 1. The rights for irrigation were attached to certain tracts of land described in the certificates of appropriation. In issuing instructions to the Water Commissioner the locations of these lands were given and he was notified that the land so described would require more water than the stream would supply and that, in order to protect the interests of all users, he must rigidly enforce the provisions of Section 1359 Rev. Stat.*

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* Water Commissioners to Prevent Waste of Water. SEC. 1359. Said water commissioners shall so divide, regulate and control the use of the water of all streams within their respective districts in such manner, as near as may be, as will prevent unnecessary waste of water, and to that end such com-

In 1895, the Commissioner was notified, by the parties in interest, that the Springvale Ditch Company, a corporation having the right to use ten cubic feet of water per second of time in the irrigation of 700 acres of land, had sold this right for each alternate week to another appropriator, and he was requested to divide the water in accordance with the terms of this sale. The purchaser of the right was the last large appropriator on the stream. There were intervening priorities between that of the seller and that of the buyer, and the holders of these rights threatened to be injured by this enlarged use of the earlier priority. Because of this, and the belief that the sale was illegal, the Commissioner refused to recognize the transfer.

An appeal has been taken to the courts and the case is still pending. Its settlement will go far towards fixing the status of an appropriation under our laws.

The action of the Commissioner was in accord with the rulings of this office, and I am unable to understand how it will be possible for him to perform his duties if this sale and similar sales are upheld by the courts. The seller did not relinquish his right to irrigate any of the land for which the appropriation was originally made. The buyer did not designate the location or acreage of the land he proposes to irrigate with the water purchased. He can irrigate 700 or 7,000 acres if the water bought will go so far, and if he can change the location of use of this right at all it can be shifted once a month or once a year as its holder may elect. The water sold will not be used for the purposes for which it was appropriated, and the Commissioner in carrying out the conditions of this, or similar sales, would cease to be a public officer enforcing the economical use of water and protecting users' rights for the public good, and become an agent, paid by the State, to enforce contracts in water for private gain.

OWNERSHIP OF DITCH DOES NOT CONTROL WATER RIGHT.

At the meeting of the Board of Control in March, 1896, a

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missioners shall so shut and fasten the head-gate or gates of all ditches *so that no more water will flow into said ditch than is actually required and will be used for the uses or purposes for which such water was appropriated*, and any person who may be injured by the action of any water commissioner or by his failure to act pursuant to this chapter, may resort to any court of competent jurisdiction for such relief as he may be entitled to. (S. L. 1886, Ch. 61, Sec. 29.)

petition was presented by Thomas J. Foster, which recited that he was the owner of a certain ditch known as the Upper Phil Kearney ditch; that in the adjudication of rights to water on Piney Creek, a tributary of Clear Creek, in Water Division No. 2, a right to water for the irrigation of fifteen acres of land has been awarded to John Leitner, the water for this land being diverted and transported through the said Upper Phil Kearney ditch.

The petition set forth that in a litigation subsequent to the order of the Board of Control the District Court had found that Foster was the sole owner of this ditch. He, therefore, petitioned that, because of the establishment of such ownership, the order of the Board be vacated and amended, and that Foster be decreed by the Board the sole and exclusive owner of said ditch *and appropriation of water*, and that the certificate of appropriation to Leitner be canceled.

On examining this petition it was the opinion of the Board that its prayer was founded on an erroneous conception of the water laws, and of the extent of the powers and authority of the Board. Believing that the legal questions involved were unusually importaant the following letter was addressed to the Attorney General stating the views of the Board and asking his advice as to their correctness. Below is given the letter and the reply thereto:

CHEYENNE, WYO., March 20, 1896.

HON. B. F. FOWLER,
Attorney General,
Cheyenne, Wyo.

DEAR SIR:—

The State Board of Control is in receipt of a petition for review of the order determining the priorities of water from Piney Creek and tributaries, and that the Board of Control cancel a certain certificate of appropriation of water to John Leitner, Guardian, and find that Thomas J. Foster is the sole owner of the Upper Phil Kearney ditch.

The Board of Control has given careful consideration to this petition, and to the order of the court determining the ownership of the Upper Phil Kearney ditch, and has examined the evidence submitted before said Board in the adjudication referred to. We find that the testimony submitted showed that said Leitner had irrigated the land for which an appropriation was issued through the Upper Phil Kearney ditch and was entitled to an appropriation therefor, and after a re-examination of the evidence the Board is of the opinion that the decree establishing this appropriation was correct. In awarding an appropriation for the particular land for which an appropriation was claimed by said Leitner the Board did not attempt to determine that he had any ownership whatever in the ditch of Mr. Foster. It simply decided that the evidence submitted showed that the water had been transported through this ditch. The Board has always held that its authority is restricted to the examination and determination of the facts showing the application of the water of the State to beneficial use and the rights thereby created, and that it could not determine the property rights in ditches through which the water was conducted. That question has been before the Board repeatedly and the decisions have been uniform. In the same way the Board is now of the opinion that it is not within its jurisdiction to say that Mr. Leitner is or is not a part owner in the Foster ditch. The decree of the court is regarded as determining that fact, but its validity or effect will not be in any way enhanced, in our opinion, by an assumption on the part of the Board that it has authority to in any way determine such facts. We have by order instructed the Division Superintendent to notify the Water Commissioner of the effect of the order of the court and that the amount of the appropriation through the Upper Phil Kearney ditch has been reduced by such order by the amount necessary for the irrigation of fifteen acres, but we do not feel authorized to cancel the certificate of Mr. Leitner. We believe if he can secure satisfactory arrangements for the transportation of the water appropriated through the Upper Phil Kearney ditch by giving suitable compensation to Mr. Foster for the service rendered, or if he can make arrangements for the transportation of the water appropriated for this land through some other ditch he has a perfect right under our laws to do so, and that the appropriation for the land is not destroyed by the fact that he is not part owner in a particular ditch.

Recognizing the importance of the questions raised and desiring to avail ourselves of your assistance in their proper solution, we shall be pleased if you can advise us as to whether or not, in your judgment, the Board has any authority whatever to determine or pass upon property rights in ditches, and whether or not the decree of the court in this case makes it mandatory upon us to cancel the certificate of appropriation of said Leitner.

Respectfully submitted,
ELWOOD MEAD,
Pres. State Board of Control.

March 22nd, 1896.

Hon. Elwood Mead,
State Engineer,
Cheyenne, Wyoming.

Dear Sir:—

Replying to your communication of March 20th, with reference to the application of Thomas J. Foster for a review of your decision granting a certificate of appropriation to John Leitner, Guardian, in which application for review Mr. Foster claims to be the sole owner of the Upper Phil Kearney ditch, and presents a decree of the District Court of Johnson County in an injunction suit brought by Mr. Foster against Mr. Leitner, the decree establishing the ownership of Mr. Foster:

I desire to state that while the State Board of Control was correct in respecting the decree to the extent of instructing your Water Commissioner that the amount of the appropriation for the Upper Phil Kearney ditch should be reduced by the amount of water granted therein to Mr. Leitner for the irrigation of fifteen acres, still at the same time you would not be justified in cancelling the certificate issued to Mr. Leitner.

While there are allegations in the petition for review to the effect that Mr. Leitner made fraudulent representations to your Board with regard to his having an interest in the ditch in question, still in the absence of an affirmative showing of such fraud there would certainly be no authority on the part of your Board to take this for granted and cancel the certificate in question. The decree of the District Court of Johnson County does not indicate this, nor do I understand that affidavits or other proof have been filed at this time for this purpose. The petition which is filed is not in the nature of a petition for re-hearing, and I am of the opinion that this question can not be properly reached by your Board in any other manner, and unless with the application for a re-hearing proof should be presented to your office showing that at the time Mr. Leitner used the Phil Kearney ditch he did so as a trespasser and without the consent of Mr. Foster, then your certificate should stand.

As to whether or not Mr. Leitner is able to use the water in the future is certainly not a question to be considered, as under the statute he is given two years before he can be charged with abandonment, and if during that time he should build a new ditch or arrange with Mr. Foster or some other person to conduct the water from the stream in question upon his land, he would be entitled to appropriate enough to irrigate fifteen acres.

As to the claim that there is a cloud upon the title to Mr. Foster's ditch by your granting the certificate, this is certainly a mistake, and as Mr. Foster would not get the benefit of the water for the fifteen acres which is appropriated by Mr. Leitner, I can certainly see no advantage to Mr. Foster in securing the cancellation of the certificate in question.

Respectfully submitted,
BENJAMIN F. FOWLER,
Attorney General.

RULINGS OF THE BOARD IN ACCORD WITH THE EXPERIENCE OF THE IRRIGATED DISTRICTS OF EUROPE.

If human experience has any value we ought to heed its lessons. Irrigated agriculture is as old as civilization. The water laws of southern Europe are the growth of centuries, during which time every form of control of streams, from exclusive state ownership to absolute private ownership, has been tried.

It is surely worth considering that there is not an irrigated district in any of these countries where security and content have not followed attaching water rights to the land, nor is there a district where separate ownership of land and water has not resulted in disastrous controversies, misery and wrong.

The significance of these results ought not to be disregarded. When Governor Richards, in discussing the rulings of the Board of Control, said: "In taking this advanced view of this question, I believe that Wyoming is blazing a trail that will be followed by other States and Territories of the arid region,"* he had behind his prophecy the experience of every irrigated land old enough to have a history.

The European country which most nearly resembles ours in its climatic conditions is Spain. Its rainfall is less than that of Wyoming, hence irrigation is indispensable. Spain is also the country which best repays study, since its code of water laws is both the most concise and most complete of any country in the world where irrigation is largely practiced.

These laws are the outcome of the experience of a thousand years in which local laws and customs, widely different in character, have operated side by side in the same province.*

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* Message to the Third State Legislature.

The most impressive of these lessons, both to Spain and to the people of this country, is afforded by the experience of the province of Valencia. The plain near the city of that name is one of the oldest and most celebrated irrigation districts of Spain. "Its works date from the time of the Moors; its water rights are founded on custom which antedates existing property records."† The prosperity of its people and the success of its institutions have been admired and commended by every writer, and all agree that they rest on the inseparability of land and water.‡

In the same province with the district of Valencia is the district of Elche. Here the waters originally owned by the land holders but not made inseparable from the land have gradually passed into different hands from the owners of the soil. "The land holder has no right to irrigate at all. When he needs water he buys it, the same as he does manure for his land when he wants to use it."§ The result of this separate ownership has been to impoverish water users, and although the district has equal resources with those which surround it the people are far less prosperous.

In like manner the province of Murcia‖ where water is attached to the land* is prosperous and progressive, while in the adjoining district of Lorca where land and water have been gradually separated† the outcome of this separation has been "Large dividends for water owners, a languishing agriculture, a poor peasantry, and no enterprise to develop the country."‡

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* "Old irrigated Spain, therefore, never was subjected to feudal rulers; and, as a consequence, we find there no great water holdings, like in Italy, oppressing the people and resulting in monopoly of land, but, on the contrary; we find the waters attached to the lands, the lands held in small parcels, and the people an independent peasantry." (Hall's Irrigation Development, page 366.)

† Hall's Irrigation Development, page 384.

‡ "So on the irrigated plain of Valencia the water is annexed to the land. No one can sell land without at the same time selling water-rights; nor can any one sell water, separately, and cut off the supply to the land, which is to enjoy it forever. 'This prohibition applies not only to a final sale of the water. but even to the sale of a single irrigation turn.' This principle was embodied in the acts of concession, and the practice could not lawfully be other than it is. 'The waters were conceded to each of the proprietors, with the settled condition that each should apply his share of water to his land. If a proprietor does not make use of his share, the water not utilized remains with the common store for the common use of other proprietors. This idea is so rooted in the spirit of the populace that the administrators of the water assured us they had never been troubled with such a question.'—Aymard, pp. 36-37." (Hall's Irrigation Development, page 387.)

§ "'The great mischief of the system is to create an antagonism between the proprietors of the water and those of the land, and to place those who, in an agricultural point of view, are the deserving ones, dependent on those who are capitalists and strangers to the lands tilled. These latter certainly would not see the dam put in jeopardy, because their property lies there, but they take no genuine interest in the management of the waters or in the development of the irrigation resources of the country; for they may be moved by the thought that the more water there is, the cheaper it will be. There is a certain limit, beyond which the supply of water increasing, diminishes their revenue. With a system like this, we can never see what is at present being done in Alicante—a syndicate of landholders not afraid of an estimated expense of 600,000 to 700,000 francs to further develop the water supply of the neighborhood. All spirit of progress in Elche is fatally kept down.'—Irrigation in Southern Europe, by Aymard, page 185." (Hall's Irrigation Development, page 429.)

‖ "The water right has from time immemorial been an appurtenance to the land, which bears in direct proportion to area irrigated each year, the ordinary expense of maintenance and administration works." (Hall's Irrigation Development, page 429.)

There is another provision, found in European irrigation laws, which is worthy of careful consideration by our legislators. Under these laws there is no such thing as a free appropriation. Every user of water must pay the state a rental therefor. These rentals are, in most cases, very small, being only intended to pay the expenses of supervision and to prevent the salaries of Water Commissioners and Superintendents becoming a burden to the general tax-payer. The great value of the system is its influence in promoting economy. The man who pays for what he gets will not be wasteful. It also places the doctrine of public ownership in a form to be comprehended by all, something not true of our method of free grants in perpetuity.

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* "The water is in the fullest sense a common property, and the right to it is inseparable from the land ownership. If an irrigator does not use his water on his land, it will not be distributed to him. He cannot take it and waste it; he must usefully employ it, or it must remain with the common stock, under the title and the regulations." (Hall's Irrigation Development, page 415.)

† "This result of separating the water from the land has not come about without great struggles and opposition, for the working farmers as a class have all along opposed such an interpretation or straining of the terms of the royal gift, while rich landholders and capitalists have advocated this reading of it, and the charge is made that undue influence has had its effect with the town council, in securing the acceptance of such result. At the time of Aymard's writing (1864) the contention was still going on, but the outcome had then so long been sanctioned by custom that a change back to the original system could hardly be hoped for." (Hall's Irrigation Development, page 422.)

‡ Aymard finds in the outcome of irrigation in Lorca, as compared to that of Valencia and other places in Spain where the water is attached to the land in ownership, a lesson to which he draws special attention. He produces the argument used in favor of the Lorca system and then answers it:

"'Why,' say these owners, 'should the ownership of water be hampered with greater impediments than that of land? If it suits me to draw my revenue from sales of water rather than from crops on lands, why should I not be permitted to do so; by what right can they prevent me? Is it in the name of general interest? Well, provided the water is used, it is of little importance on whose land it is put. Furthermore, the selling of water is the best means to prevent its being wasted. When the farmer receives his water on a certain day, without anything to pay, he always gives useless irrigations, which would have been better employed on other lands, and this abuse need not be feared when water is sold. This system is the most satisfactory to all legitimate requirements of a general interest which is to irrigate by a given volume of water the greatest area of land possible.'

"These reasons considered by themselves are seductive; but those who bring them forward do great injustice by not mentioning the antagonistic attitude which the system of sales has engendered between the owners of water and those of the lands. A good regulation could prevent abuse and waste of water; nothing can prevent the deplorable consequences of an organization that trusts the destiny of the land to capitalists whose interest is in direct opposition to the water resources of the country. This system is the reverse of progress; it condemns the land to inactivity. that has the misfortune to be submitted to it, and this estimation is abundantly proven by the example at Lorca."—Aymard, pp. 243-244.

This authority shows that water rates are enormously high in Lorca, and that agriculture cannot stand them; that there is no enterprise in the land; that in spite of government assistance the district has not advanced; that even the works built by government have been allowed to go out of use, while but a small part of their original cost would rehabilitate them and put them again in commission; and he attributes these results to the facts that the irrigators do not own the water-rights; that the speculators in water control the situation, and keep down the spirit of enterprise to keep up their rates for water; and he, also, very unfavorably contrasts the spirit pervading the people of Lorca, as evidenced by their works, with that of the people of Valencia, as evidenced by their works based upon ownership of land and water together. (Hall's Irrigation Development, pp. 427-428,) It is probably too early to seriously consider its adoption. That it will come, however, when increased use and augmented value make systematic distribution a more important consideration than it is at present, is confidently expected.

That the policy of making free grants in perpetuity is not only an unnecessary surrender of public property but one fraught with great possibilities of misunderstanding and abuse is clearly shown by the history of irrigation in Italy. The streams of that country have from ancient times been held to be the property of the state exactly as ours now are. In exercising this right of property the government has disposed of the waters by one of three methods. First, sale of the water in absolute property to parties paying certain established sums for it. Second, grants of a perpetual lease of the water on the payment of a certain annual amount. Third, grants of a temporary lease for a variable time at a certain annual rate, control of the water reverting to the state on the termination of the lease.*

In the beginning of all institutions the primitive conception is the one in which public interest is least regarded, and the most common method of disposing of streams at the outset was to sell them to the highest bidder.†

So clear a description of the results of this policy is given in Baird Smith's History of Irrigation in Italy that it is inserted herewith:

"A grant in perpetuity of such a material as water, whose value must necessarily go on augmenting with the progress of agricultural irrigation, is an act of injustice towards the government, and is especially so in a country where the revenue derived from the water forms a legitimate addition to the resources of the State, supplying it with the means of extending the works, which, in the actual condition of society, it alone is able to undertake. Hence, therefore, I am distinctly of opinion, that for the government of India to follow the example of that of Lombardy, in parting forever with its right of property in the waters of the country, on receipt of sums which cannot possibly represent the real value of the article, would be an unwise course, not only as regards its own interests, but also those of the irrigating community. For there is no one point better established by experience in northern Italy generally, and in Lombardy particularly, than this, that the selfishness of grantees in perpetuity of water has been one of the most serious obstacles to the development of irrigation. Acting on the principle that they had a right to do what they liked with their own, they were in the habit of suspending arbitrarily the supplies of water disposed of by them to other parties under subordinate grants, of increasing as they thought fit the prices to be paid, and, in a word, of pushing to its utmost limits the right of absolute property purchased by them from the State. But an agriculture founded on artificial irrigation cannot advance as it ought to do, under such an arbitrary system." (Vol. 2, pp. 137 & 138.)

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* Smith's Irrigation in Italy, Vol. 2, page 135.

† "The great landed proprietors during the progressive development of irrigation were the municipal, the religious and charitable corporations, and the powerful noble families, the feudal superiors of the soil. As the whole of these associations commanded large capital, it was in their power to pay at once the sum required by the state, for such volumes of water as were suited to the wants of their respective properties; and having thus secured the right to employ the waters so purchased as seemed to them best, they were relieved from all harassing interference in applying them for their own use or in disposing of them to others. * * * * Varied though the dynasties governing Lombardy have been, and however different in their origin, their claims, or their systems of administration, all found that, having once granted the absolute property in the waters of the country to private parties, in consideration of certain sums paid, or services rendered, they had thereby created collective interests powerful enough to maintain this right against all encroachment, and even to withstand up to the present hour the just claim of the state to regulate the grants according to their original terms." (Baird Smith, Italian Irrigation, Vol. 2, pp. 135-136.)

"The holders of ancient grants in perpetuity have occasionally asserted an absolute right of property in the water thus granted to them; but the legal tribunals have invariably rejected such claims, on the ground that the grants were made for the general good of the country, as much as the special advantage of the grantees." (Vol. 2, page 259.)

Because of this experience it has been found necessary, to secure the greater development and prosperity of irrigated agriculture, for the Italian Government to purchase a large number of these early and important grants in order that the State might reassume a comprehensive and effective control of the streams.

APPROVAL OF PERMITS TO APPROPRIATE WATER.

Section 34 of the Water Laws of 1890-91 requires any party intending to acquire a right to the beneficial use of water in Wyoming to apply to the State Engineer for a permit to make the diversion and appropriation for such right. A portion of this section reads as follows:

"All applications which shall comply with the provisions of this act and with the regulations of the engineer's office, shall be recorded in a suitable book kept for that purpose; and it shall be the duty of the state engineer to approve all applications made in proper form, which contemplate the application of the water to a beneficial use and where the proposed use does not tend to impair the value of existing rights, or be otherwise detrimental to the public welfare. But where there is no unappropriated water in the proposed source of supply, or where the proposed use conflicts with existing rights, or threatens to prove detrimental to the public interest, it shall be the duty of the state engineer to reject such application and refuse to issue the permit asked for."

The portion of this paragraph which states "where the proposed use conflicts with existing rights, or threatens to prove detrimental to the public interest, it shall be the duty of the state engineer to reject such application" has been the cause of some discussion and of frequent inquiries as to the Engineer's interpretation of what is meant thereby. An explanation in the report may be of service in answering these inquiries.

One of the questions frequently asked is, Will the State Engineer approve a permit which describes land already included in an existing permit, and in connection with this inquiry the opinion has been frequently volunteered that the

Engineer could not take such action because it would conflict with existing rights. The reply has uniformly been that the Engineer's action will in all cases be governed largely by whether or not the approval or rejection is for the public interest. Many applications for permits, made in conformity with the law, are not followed by the actual diversion and use of water. Either through financial inability or some other cause parties frequently abandon projects without notifying this office, and in many other cases are not able to carry out projects even though they still desire to do so. Others able and willing to take up the work prefer to carry it out under their own management and, instead of assisting in the construction of ditches under permits already approved, apply for new ones. In all of these cases it has been the effort of the Engineer to take such action as would secure the most effective reclamation of land and the best use of our water supply, and where this has required the issuance of a second permit, describing the same land, then such permit has been issued, but wherever the question was in doubt or where the issuance of a second permit tended to interfere with the carrying out of a project already under way all such applications have been rejected.

In order to illustrate the position of the office and its action on these matters two cases will be given:

The Black's Fork Canal takes water from Black's Fork Creek under a permit recorded in the Engineer's office in April, 1891. The canal was completed and furnished water to settlers under it until 1895, the service, as we are informed, being rendered without any compensation to the ditch company. At that time, owing to a difference between the settlers and the ditch company as to water rates, an application was made for a permit to be issued to the settlers to build a competitive canal. This application was refused on the ground that it was not to public interest to thus destroy the value of legitimate investments of this character. The Engineer, however, offered to meet the parties and endeavor to assist in a satisfactory adjustment of their differences. It was not found necessary, however, to have such meeting, the adjustment being made by the parties themselves.

In all cases where ditches have been actually built, or are in process of construction, applications for other ditches to water the same land must show an especially good reason for such additional ditch or they will be rejected, but where permits have been issued without being followed by construction, then there must be good reason shown for this failure to begin such construction or the second application will be approved. The following letter, replying to a protest against the approval of a second permit, shows the reasons for such action:

CHEYENNE, WYO., Feb. 14, 1896.

DEAR SIR:

Replying to your inquiries of recent date would say: Maps have been filed with both the applications referred to.

In regard to the approval of an application for permit to reclaim land described in a permit issued to you, my action will be governed entirely by the character of the application. If made by actual or intending settlers on this land, or by parties who show their ability and purpose to provide such settlers with a water supply promptly, it will be approved. If made by parties who are not able to show their ability to proceed promptly, or under conditions which indicate it is for speculative purposes, it will be rejected. In either case the governing consideration will be the necessities of the parties making the application, and the evidence they submit of their good faith in the matter. But little consideration will be given to the permit issued to you if the application is made by settlers on this land. The fact that you have had a year of unrestricted opportunity with no visible result, as I am informed, and as your letter intimates, makes it much more important that the people desiring to occupy and reclaim these lands should be aided and protected than that development should be retarded in order to protect your prospective profits, and the latter would be the result of a refusal to issue a new permit.

From your letter, and from statements made to me by residents of the Basin, I fear an erroneous idea obtains as to what is required to make a valid appropriation of water and of the nature of the right conferred by a *permit* to make such appropriation It has been alleged that both the filing on the Paint Rock and on the Grey Bull Rivers were not made for the purpose of using water but to acquire rights for the purposes of sale and to compel those desiring to reclaim the land described in your applications to pay the holders of these permits for the privilege. As evidence of this it was stated to me last season that you were insisting that by reason of your permit you could prevent any one from watering these lands unless they paid you for permission to do so. I have no personal knowledge of the facts, but an examination of the State Engineer's Report will show that the purpose of the water laws and the policy of this office will not sanction nor sustain any such procedure. The State will endeavor to protect investments in ditches after the investment has been made and will endeavor to prevent the useless multiplication of ditches and consequent waste of water, but it will not interfere or retard the construction of ditches, to protect or sustain filings which are not promptly followed by construction. It is not to the advantage of the State to promote filings by parties who are not able to build ditches and reclaim lands, and where a reasonable time has been allowed for such construction without any material results new permits will be issued. While I should regret taking any action which would cause you the loss of any labor heretofore spent, the protection of public interests and the maintenance of the policy, followed in similar cases heretofore, will require the action indicated.

Sincerely yours,
ELWOOD MEAD,
State Engineer.

In some cases permits have been issued which describe land embraced in existing approved applications after the ditch has been actually built. Three instances of this character occurred under the Globe Canal, which takes water from the Stinking Water River in the Big Horn Basin. This permit was issued on the assurance and belief that both the money was available to build the canal and the settlers to occupy the land, and a large area of land was included in the original permit and a subsequent enlargement; the original permit was issued in June, 1894, and was promptly followed by the beginning of construction. Several applications for other ditches following approximately the same route and watering the greater part of the same land were filed immediately after its beginning. These were refused on the ground that they would add nothing to the effective reclamation of the land, while increasing the cost thereof, and that public interest required the protection of what promised to be a meritorious project. In 1896, however, three applications were filed in the Engineer's office by settlers on the land described in the Globe Canal permit, asking permission to construct ditches to divert water for the irrigation of their homes. In each case it was stated that they had purchased rights in the said Globe Canal but had been unable to obtain water in accordance with their agreements with this canal company, and that they were now in a position where they were compelled to either build their own ditches or abandon their homes. A careful investigation having shown that these statements were substantially correct the permits were issued, it being the view of the State Engineer that public interest demanded the protection of settlers rather than of the ditch company's investment.

The conditions governing the Engineer's action in these matters make it indispensable that he should exercise common sense and some discretion, rather than attempt to adhere to a set of fixed rules. He frequently does not know whether the land described in the application is public land or belongs to the applicants. He often does not know whether the parties propose to furnish water for hire or simply to irrigate the lands of shareholders in the ditch. He does not know and cannot know whether they are in a financial position to carry out their project promptly, and is not authorized to make any inquiry into this matter except in works of unusual magnitude, and he had not this authority until 1895. The parties securing permits give no bond to the State to carry out the enterprise in accordance with the conditions therein specified and are subject to no penalty if they fail to do so. It would be an altogether one-sided arrangement to assume, therefore, that the issuance of a permit gave them an exclusive license to control the reclamation of the land which might be described, and the Engineer has ruled that it is not such an exclusive license, but it is one that the State should regard, and will regard, only so long as the work is being carried on in a way to benefit public interests. Whenever public interest would suffer from its being maintained then it should be, and has been, disregarded.

WHEN IS A STREAM FULLY APPROPRIATED?

The paragraph, quoted at the beginning of this article, states that where there is no unappropriated water in the proposed source of supply, the Engineer shall reject such applications. The determination of when this occurs has been found to be far from simple. If the discharge of a stream was uniform throughout the season then the only thing necessary would be for the Engineer to find the aggregate amount of the appropriations and when these equaled the discharge to cease issuing permits. But, as is well known, streams do not remain uniform throughout the season, nor are the demands of appropriators continuous or uniform.

In 1896, the discharge of Clear Creek, in Water Division No. 2, reached 500 cubic feet per second in June, but fell to 40 cubic feet per second in August. To stop issuing permits when the appropriations had reached the least of these volumes would result in more than one-half of the stream's discharge running to waste, while to continue issuing permits until the maximum discharge had been reached would be to create many rights which could be satisfied for so brief a period as to have nothing but a fictitious value. On Goose Creek the maximum discharge in June exceeded 620 cubic feet per second, and three times during this month the discharge ran above 500 cubic feet per second, but in July the discharge fell to 40 feet per second. A right which furnished an abundance of water during the first ten days of June and which afforded nothing whatever in July or August would be of little service, while to cut the appropriations down to the discharge of July would again result in a large volume of water running to waste.

The average discharge of Green River for June, 1896, was 11,769 cubic feet per second. The average for May was less than one-fifth of that, or 2,136 cubic feet per second, while the average discharge for July was less than one-half, or 4,198 cubic feet per second.

An examination of the discharge diagrams, which accompany the article on stream gaugings, will show a similarly wide fluctuation on each of the streams where there have been continuous measurements of the flow. It is manifest, therefore, that the fixing of a limit, where the requirements of this section make it necessary that permits shall be refused, is not a matter of exact mathematical computation but one into which many elements of uncertainty enter and in which a right decision requires both excellent judgment, considerable experience and an intimate acquaintance with the existing conditions on the stream. That the Engineer has been able to combine all these qualities in his decisions is not claimed. Undoubtedly some permits have been issued which should not have been, and sometimes this has been a fault of judgment on the part of the Engineer, but more often a lack of knowledge of conditions.

The wisdom or expediency of issuing or refusing a permit depends in some measure also upon the location of the projected diversion on the stream. The construction of an additional ditch below all existing rights does no injury. If there is no water no one suffers but the last appropriator himself. The building of the same ditch above existing rights might, on the contrary, make it a continuous nuisance and a menace to all prior rights, because the owner of that ditch would be in a position to divert water whether he was entitled to it or not, and it would require a considerable expense on the part of the county in employing the water commissioner to see that he did not do this. There have been instances, therefore, where permits to take water from the head of a stream have been refused, while subsequently permits to take water from near the mouth of the stream and below other appropriators have been properly approved.

In some cases permits have been issued where it was known that the stream did not afford water enough for the complete irrigation of the land described in the application, but there was a certain volume of unappropriated water which, while not sufficient to completely reclaim land, would, if used, add greatly to its productive value. In such cases the applicant was notified of the conditions by the following endorsement on the approved permit:

> "The records of the State Engineer's office show the waters of —— creek to be largely appropriated. The appropriator under this permit is hereby notified of this fact, and that the issuance of this permit includes only the right to divert and use the surplus or waste water of the stream, and confers no rights which will interfere with or impair the use of water by prior appropriators."

In the surveys of ditches taking water from Black's Fork and tributaries, and Medicine Bow and tributaries, made during the early summer of 1896, it was found that a large number had been recently constructed which did not appear on the records of the Engineer's office. These ditches had been built without the approval of the State Engineer, and in disregard of the requirements of the State law. Experience has demonstrated, however, that no provision of the water laws is more important than that which provides for a record of all intending diversions, and that the efficiency of our irrigation system depends very largely upon the enforcement of this requirement. Accordingly the following letter was sent to each of the Division Superintendents:

CHEYENNE, WYO., Aug. 10, 1896.

DEAR SIR:

In the taking of proof of appropriation of water hereafter the requirement of the State laws that all parties making appropriations of water since December 22, 1890, shall have first filed an application with the State Engineer, must be kept in mind and the requirement enforced. The language of the law relative to this matter is as follows: (See Sec. 34, as given in the State Engineer's Report for 1894, on page 227.)

"Any person, association or corporation, hereafter intending to acquire the right to the beneficial use of the public water of the State of Wyoming, shall before commencing the construction, enlargement, or extension of any ditch, canal or other distributing works, or performing any work in connection with said construction, or proposed appropriation, make an application to the State Engineer for a permit to make such appropriation."

(Also Section 37, page 232.)

"The priority number of such appropriation shall date from the filing of the application in the Engineer's office."

Under this law the construction of new ditches, without filing of applications as specified and their approval, or the extension of the use of water to the irrigation of other lands without the filing of said application, is illegal, and such users of water have no right thereto, nor can any date of appropriation be fixed.

You will, therefore, in taking proof of appropriations accept all proofs of appropriations made prior to the enactment of the State law, whether a statement of claim was filed in accordance with the territorial law or not. You will also accept all proof submitted in support of appropriations made in accordance with the State law, but you will refuse to accept any proof of appropriation claimed to have been made since the enactment of the State law except in accordance with its terms, and where water has been used without the securing of a permit from the proper authorities you will reject the proof and notify such parties that they can only acquire rights through the filing of applications and the issuance of permits from the State Engineer's office.

Yours truly,
ELWOOD MEAD,
State Engineer.

Nearly all of the parties who had failed to comply with the State law have since, on being informed of its requirements, filed applications for permits, so that so far as these streams are concerned the matter has been adjusted.

The situation serves, however, to emphasize the importance of having the land and water under one control. The settlers on the land reclaimed were, as a rule, ignorant of the requirements of the water laws, and nothing in their dealings with the Land Office, in filing on their lands, gave them any intimation of what was required to secure a water right for that land. Out of it comes, therefore, a haphazard construction of ditches and a wasteful use of water simply because these settlers and the State Irrigation Department are not brought together until after the mischief has been wrought.

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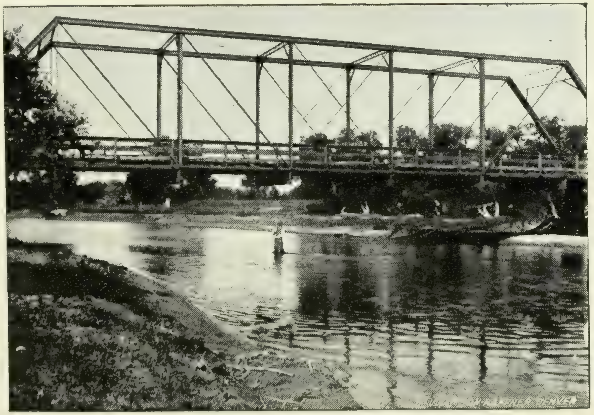
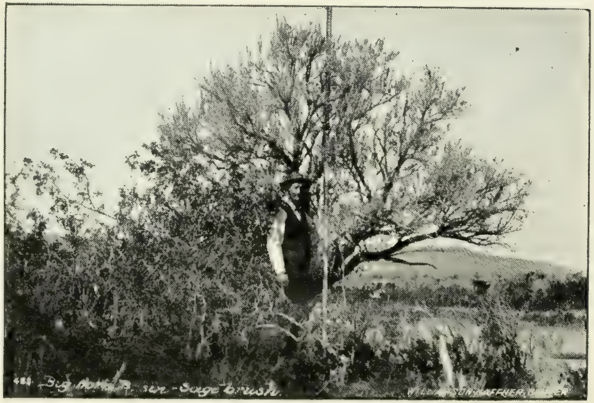
FORD ON GREY BULL RIVER AT OTTO.

WATER WHEEL ON BIG HORN RIVER.



GAUGING LARAMIE RIVER AT UVA.



SAGE BRUSH, BIG HORN BASIN.

From Photo

FIELD WORK, 1895.

SURVEYS OF DITCHES TAKING WATER FROM HORSE CREEK AND SAND CREEK, IN WATER DIVISION NO. 1,

DISTRICT NO. 10.

A controversy having arisen over the priority of right to use water from Horse Creek, a small tributary of the Sweetwater river, an adjudication of water rights therefrom was requested and the survey of ditches, preliminary to such adjudication, was ordered, and carried out by Mr. Gilcrest.

HORSE CREEK.

Work commenced on the 22nd of July. Horse Creek is a small stream, having its source on the southern slope of the Rattlesnake range of mountains, and running in a southerly direction enters the Sweetwater at a point about six miles above the junction of the latter stream with the North Platte. It flows through a gently rolling country, until its sole tributary, Fish Creek, is received, at which point it enters the Sweetwater valley.

So far as examined the banks of the stream are entirely devoid of trees or even brush.

The occupation of the present settlers along the stream is stock raising, and irrigation is confined almost exclusively to the growing of native hay, a few vegetables being raised for family use. The cultivation of grain, at one time undertaken somewhat extensively near the mouth of the stream, had been abandoned at the time of the survey. Since the adjudication this has been resumed, and the fields of oats and wheat seen by the Assistant Engineer in August of this year leave no room to doubt that the cultivation of cereals can be undertaken with assurance of gratifying results.

The character of the soil and climate, however, warrants the belief that the most profitable use to which the limited water supply of this stream can be put, will be the growing of alfalfa. Since the surrounding country is peculiarly well adapted to stock raising, a more abundant supply of winter feed is needed than is now furnished from the irrigation of the few small natural meadows bordering on the stream.

From the mouth of Fish Creek, and extending down along the east bank of Horse Creek to its mouth, and thence down the Sweetwater for about three miles, is a low bench, having an even slope toward the stream, averaging a mile in width along Horse Creek, and probably two miles wide along the Sweetwater. In all there are four or five thousand acres of land well adapted to irrigation, and all is under a large canal from Horse Creek, but owing to the limited volume of water no practical irrigation has yet been attempted under it.

Thirteen ditches were surveyed, having a total length of twenty miles. Although there are upwards of 6,000 acres of irrigable land under ditches along this stream, but 890 acres are being irrigated. All of the ditches found were in good condition and all were provided with headgates. The Connor ditches 1, 2, 3 and 4, Wilson ditch, and the Healey North Side ditch, were all newly constructed or reconstructed. The Weaver ditch bore no appearance of having been used for several years, although a new dam and headgate had been lately built. An attempt was made to fill the ditch in order that its capacity might be gauged, but it was unsuccessful. There was no evidence of any recent irrigation through either the Wilson or Avery ditches. The following is a summary of the results:

Total number of ditches	13
Total length in miles	20
Discharge of stream in cubic feet per second—	
Measured at point above all ditches	4.44
Measured at point above Connor 1 and 2 ditches	.98
Measured at point below Connor 1 and 2 ditches	.53
Measured at point below U. C. Ranch,	3.04

SAND CREEK.

Sand Creek rises in the pass between the Seminoe and

Ferris ranges of mountains, and running north-easterly enters the North Platte about four miles above the mouth of Sweetwater. On leaving the mountains it follows close to the western foot of a rolling bench, almost the entire distance, about fifteen miles, to its mouth. Irrigation is confined almost entirely to the western side of the stream. The soil bordering the stream is extremely sandy, especially on the west side and near its mouth, where there are large areas of shifting sand dunes entirely devoid of vegetation. Owing to this feature, the stream, like many others in the State, disappears beneath its sandy bed about five miles from where it leaves the mountains, and does not again reach the surface, in any volume, for about five miles. This gives rise to some controversy between appropriators above and below the waterless channel, and presents difficulties in the settlement of their rights. From such investigation as was possible it is believed that the largest beneficial use of the waters of this stream can be obtained by treating the rights of appropriators above and below as separate and distinct. Although some of the older rights to the use of water are at the lower end of the stream, no benefit could accrue to them by depriving later priorities, at the upper end, of the use of water. Mr. Gilcrest's conclusion, and that of the best informed residents of that section consulted, was that the volume diverted above the said dry section would not affect the available supply below.

This survey began at Ferris on the 2nd day of August. The character of the irrigation along this stream was found to be much the same as on Horse Creek; the principal product —aside from small gardens—being native hay. A small patch or two of grain gave evidence, however, that cereals can be successfully grown.

The methods of distributing and using water along this stream are exceedingly primitive and wasteful; in view of the limited volume of water and the fact that the area of land along this stream susceptible of irrigation is so far in excess of that actually reclaimed, this is greatly to be regretted.

The bottoms bordering the stream are somewhat irregular as to surface and interspersed with numerous depressions of varying size; no attempt is made by dyking to carry water upon the higher land, nor is care exercised to prevent it from filling depressions, but it is poured into the field until the ground is saturated and all the depressions are converted into ponds and lakes. These serve only as breeding places for numerous wild fowl, and result in a loss of much surface which might, with proper care, be covered with hay instead of water. If this were looked after it would save a large amount of water for other lands now unreclaimed. As a further result of this excessive and continued flooding the character of the original vegetation is almost entirely changed, and for the unsurpassed blue-stem and red-top which originally covered the ground, is largely substituted the round rush, or the broad-leaf swamp grass, both of which are far inferior to the former for all purposes.

The discharge of Sand Creek on August 8th, above the sink, was 4.83 cubic feet, all ditches above the point of gauging being closed; while at a point below all diversions it had a discharge of but 1.55 cubic feet. The twenty ditches surveyed had a total length of twenty miles. The ditches on the upper part of the creek were generally found to be in good condition and were being used to their full capacity. But two small ditches below the point where the water sinks were in use. The most important ditches, both as to length and area of irrigable land under them, were not in condition to carry water. These ditches have their heads located upon the dry part of the stream. Owing, doubtless, to the uncertainty of the water supply in the early part of the season, and the assurance of having none before the irrigation season ends, but little effort is made to keep the ditches on this part of the stream in repair, or to maintain dams or headgates. The sandy nature of the banks of the stream causes it to fill up and its channel to shift with each season and, generally, with every hard storm. In consequence of these disadvantages the few ranches on this part of the stream do not present a very thrifty appearance, no cultivation being attempted and but little hay being cut.

STREAM GAUGINGS IN 1895.

Lack of means has thus far prevented any systematic or extensive measures to determine the flow of our streams. This work should be done, but it costs more money than the State can afford. The appropriations for the Engineer's office have thus far been absorbed in attending to business of immediate and urgent importance without being able to keep pace with its accumulation, hence streams have only been gauged as opportunity permitted it to be done in connection with the surveys of ditches made preliminary to the adjudication of water rights.

In 1895, an arrangement was made with the U. S. Geological Survey by which that bureau paid the expenses of measurements on a number of streams. Under this arrangement the original records were transmitted to Washington, the Engineer's office retaining copies. We have thus been enabled to study the results and give inquirers the benefit thereof in advance of their publication in the Geological Survey reports. The advantages have, therefore, been reciprocal. The Survey was relieved of detailed supervision and the State obtained valuable data free of cost.

The following stations were maintained in 1895:

STREAM.	STATION	OBSERVER.
Green River	Green River City	Wm. Slater.
Laramie River	Wood's Landing	S. S. Wood.
Laramie River	Uva	J. A. Carley.
North Platte River	Orin Junction	P. J. Burns.
Big Goose Creek	Sheridan	John O'Connor.
Clear Creek	Buffalo	Fred Bond.

This arrangement was continued in 1896. The methods and results will be described in the field work for this year.

FIELD WORK IN 1896.

During the present year the ditches which take water from Black's Fork and tributaries, in Division No. 4, from Medicine Bow and tributaries, in Division No. 1, and from No Wood and tributaries, in Division No. 3, have been surveyed and maps thereof prepared. These surveys began on Black's Fork early in May. As other duties occupied the time of the State Engineer and his assistant, Mr. J. A. Johnston, Superintendent of Division No. 1, was employed to make the surveys along this stream and from his report the following facts are abstracted:

Green River City was the outfitting point, a man with team and camp supplies being hired at that place. Work was to have been commenced at Granger, on Black's Fork, and prosecuted up the same; but when it was reached that stream and Ham's Fork, its tributary, were both impassable, owing to the excessive high water. Work was, therefore, commenced on Ham's Fork on May 30th. Additional storms, however, so increased the flood that the stream overflowed its banks and not only covered the bottoms with water, but ditches themselves and their headgates were entirely submerged, rendering it impossible to even find them. After surveying two ditches, further work on this stream was abandoned and the survey of Little Muddy, a smaller tributary, was taken up.

Along the lower end of Ham's Fork were found several abandoned ditches, due, it was asserted, to the increasing use of water by later appropriators at the head of the stream. This, like many other streams in this State, has a surplus of water in the early months and a decided shortage later in the irrigation season; the increased use at the head made irrigation on some of the ditches at the lower end so uncertain as to be unprofitable.

On the lower Little Muddy much trouble and delay was occasioned by the difficulty experienced in making connections with the Government survey. This was due in part to the fact that the Government corners were not properly established, and in part to lack of knowledge, and inclination, on the part of those in charge of the ranches and ditches to render any assistance, or to take any interest in this work. These places were owned by non-residents and in charge of hired help who had no knowledge of property lines or of Government corners, and were indifferent as to the prosecution of the work. As a rule, where owners lived upon their property they were much interested in the survey and rendered all the assistance in their power.

LITTLE MUDDY.

Only two ditches were found on Little Muddy proper. This stream, having its source on the divide between Green and Bear rivers, is increased by numerous small tributaries, each of which usually has a spring for its source. On each of these tributaries is located a ranch, and usually only one. As a result there is little cause for, and no probability of, controversies between appropriators unless new ditches should be built, and as the water supply is limited it is not believed to be advisable to issue any more permits on this stream to new appropriators. Work was completed on the above stream on June 6th, and commenced near Piedmont on the Big Muddy on the 7th, there being but one ditch below this point for twenty-five miles. The survey of ditches on the upper part of the stream was completed on the 10th.

BIG MUDDY.

Big Muddy presents more serious administrative complications than Little Muddy. Its two branches are known as East and West Muddy. As the stream runs nearly dry in the latter part of the season there is of necessity a shortage, and conflict among the appropriators. One exception to this deserves to be noted: The Stoddard and Moslander ditch draws its supply of water, during the season of scarcity, from Black's Fork and is, therefore, independent of the rights of other appropriators on Big Muddy. In addition, the water so obtained is diverted in Utah, out of the jurisdiction of the Wyoming authorities and hence of appropriators in Wyoming on Black's Fork. They, therefore, belong to "No Man's Land" so far as the enforcement of priorities is concerned, and no attention has been paid to their ditch. Notwithstanding Stoddard and Moslander's ranch is at an altitude of about 8,000 feet above sea-level, several hundred acres of alfalfa are being successfully grown. The principal crop on the other ranches along the stream is native hay.

BLACK'S FORK.

On reaching Black's Fork it was still very high and many obstacles were encountered, owing to the numerous swamps left by the overflow. The surveys of ditches on the upper part of Black's Fork were completed and work commenced on Smith's Fork on June 14th. Six days were consumed in the survey of the ditches on the latter stream and its tributary, Willow Creek, there remaining a few ditches on Black's Fork near Fort Bridger.

Ditch construction on both upper Black's Fork and Smith's Fork is simple and inexpensive. This is due to the shallow channel, low banks and rapid fall of both streams. Owing to the above features, during high or even moderate stages of water they divide up into numerous small channels and sloughs, rendering it difficult at times to determine which is the main stream. These channels are constantly shifting; with each recurring season new ones are being formed and others abandoned, making it a prolific source of annoyance and uncertainty to the irrigator, as the main channel of today may be a dry bed of cobble-stones to-morrow.

SMITH'S FORK.

Smith's Fork is bordered by a dense growth of willows, and the greater portion of the meadow lands are narrow strips between the channels, whose banks are also thickly lined with willows; this entails much inconvenience in making surveys, especially in getting the connections with the Government corners, the latter being the principal feature of the work on this stream, as in a majority of the ditches the water is applied within a few feet of the headgate.

The principal crop, throughout all this part of the State, is native hay; the only important exception being on the divide between Black's and Smith's Forks, where a number of fields of grain are being cultivated and where some fine specimens of matured grain were seen. The hay is principally the native wire-grass, which is indigenous to high altitudes, although some few fields of timothy, red-top and alfalfa were seen. The latter is not grown successfully on the bottom lands, but requires the warmer soil of the uplands. Black's and Smith's Forks carry a large amount of water early in the season which now runs to waste, but which, if utilized, would reclaim a large area of land.

Mr. Johnston, not being able to complete these surveys, returned from the field on June 21st. The remainder of the ditches were surveyed by W. M. Gilcrest, Assistant Engineer, who resumed the work on Black's Fork at Ft. Bridger on the 23rd, completing it on the 25th, ten ditches being surveyed. One ditch remained to be surveyed on the Muddy; this was completed on the 25th, and Ham's Fork was taken up again on the 27th at Opal.

HAM'S FORK.

Ham's Fork, the largest tributary of Black's Fork, runs south-east and south to its juncture with the main stream at Granger. The valley through which it flows is narrow, and except for a thin fringe of cottonwood trees which line its banks; the lower part looks unusually barren. On the upper part of the stream the banks, and much of the valley, are covered with almost impenetrable willow thickets, which also extend along the courses of the numerous small channels or sloughs, that on this part of the stream meander through the meadow from one bend to another. Much of the land utilized for irrigation lies in narrow irregular strips between these sloughs, and surrounded by willow thickets, rendering the ascertainment of the acreage irrigated exceedingly difficult, if not practically impossible. These sloughs are also utilized as ditches, temporary brush dams being constructed to raise the water in them at low stages of the river. In a similar manner the water of these channels is diverted upon the meadow wherever required. Irrigation is almost wholly restricted to the raising of native hay; entirely so upon all that portion of the stream above Opal. Near the latter place, on the ranches of Mr. Robinson and Mr. Anderson, some grain was being grown. Aside from these the only other cultivated crops seen were timothy and red-top, both of which do well and yield good returns; but a very small area, however, is being thus cultivated.

Along the upper part of the stream are quite a number of settlers, whose prospects cannot be said to be very flattering. The encroachment of numerous bands of sheep from this and the adjoining states has rendered the cattle industry—upon which the farmers in this locality depend—unprofitable; the open range being grazed off up to the fence lines along both sides of the valley, no winter feed is left and the cattle have to depend entirely upon hay. Of this an insufficient quantity can be raised to carry a profitable number of cattle through the long and severe winters which prevail in this locality. During the past season two of the principal ranchmen and stock raisers of the upper valley have been forced, from this cause, to seek new ranges for their cattle, far to the north, on tributaries of Green and Snake Rivers.

Vegetables are an uncertain crop in the upper valley of this stream, early and late frosts and cold nights preventing their successful cultivation, but lower down on the stream they are easily grown.

Forty-three ditches were surveyed on Ham's Fork. Much difficulty was experienced in properly locating these. In many cases the numerous small natural channels that meander through the valley are utilized as, and called, ditches, and these generally find their way through dense thickets of willows which render it impossible to meander them. The irrigation on this stream is extremely primitive; badly constructed ditches and imperfectly prepared land. As a result water has a lower duty than has been found elsewhere in the State. The appropriators generally believe that the only proper method of applying water to the meadows is to flood the land until the entire field is an impassable swamp, and to maintain that condition continuously throughout the irrigation season. After water is turned on in the spring the ditches are never closed until just before haying time, a flood being kept flowing continuously; indeed, few of the ditches surveyed possessed any means for shutting the water off, as long as the river was high enough to fill them, head gates being the exception.

The wasteful use of water which prevails on this stream, in connection with the character of the stream's flow, affects the rights of appropriators on the lower portion. The adjudication of rights should serve to lessen this, and there is no place where the discretionary authority of the Water Commissioner to prevent waste is more needed, nor where it should be more rigorously exercised. Excessive waste of water on the upper part of the stream benefits no one, while several ditches below, that were formerly profitably utilized, have been abandoned.

Lack of knowledge, with, in some cases, disregard of the law requiring the obtaining of a permit from the State Engineer before constructing a ditch, was particularly observable on this stream. Of the forty-three ditches surveyed on Ham's Fork, twenty-one were constructed since the adoption of the State law. Of these but nine are built in accord with its provisions and under its sanction.

This condition complicates matters when the rights and priorities come to be adjudicated by the Board of Control, and much trouble and dissatisfaction result when appropriators finally become aware that their priorities cannot date from the time of construction of their works and use of water, but only obtain from the time of filing their applications in the State Engineer's office. This is additional argument for the speedy adjudication of all the remaining streams in the State, as the longer the practice is continued the more complicated and difficult of settlement titles to water become.

MEDICINE BOW AND TRIBUTARIES.

The survey of the ditches on the above stream and its tributaries was commenced on July 7th, by M. C. McFarlane, Assistant Engineer, at Rockdale, on Rock Creek, progressing down this creek, thence up Little Medicine Bow, crossing to Shirley Basin, Little Muddy, Troublesome and Difficulty Creeks, to the main Medicine Bow, and thence up the same, the field work being completed on August 24th.

The chief industry of the settlers along this river is stock raising. Hay is the principal crop; but few gardens were seen, and the growing of small grain is almost wholly neglected. A few exceptions are to be noted. On Three Mile Creek was seen growing every variety of garden vegetables, together with such berries as currants, strawberries and raspberries. Near the head and at the lower end of Rock Creek, fine vegetable gardens were also noticed; and sufficient oats, barley, alfalfa and timothy were seen to establish the fact that all can be successfully grown.

Irrigation in the main is confined to the narrow valleys of the streams; these rarely exceed a quarter of a mile in width.

There is no irrigation on Medicine Bow below the mouth of Rock Creek. From this point to within four miles of the mouth of Wagon Hound the valley is about 1,000 feet wide, with very little timber or underbrush; above Wagon Hound the bottom land widens to about half a mile and is intersected by numerous wooded sloughs, usually honered with the name of "ditch", but just where such a ditch begins or ends becomes impossible to determine in the absence of the claimant. Above Elk Mountain post-office the bottom land is covered with thick underbrush, and the heavy deposit of vegetable silt well adapts it for growing vegetables and small fruits when cleared.

Within the last few years water has been carried away from the bottoms to the table lands at the head of Medicine Bow and Rock Creek. On the former stream the injurious results of the construction of parallel ditches are manifest, both in the waste of water and increased cost of maintenance. Especially is this the case on the west side of the stream; here, where one ditch would suffice, there are four. These several ditches follow the hillside, but a few feet apart, until the bench land is reached. Neglected repairs cause washouts and land-slides, and it is apparent that a few years will suffice to disintegrate the entire hillside unless a radical change in operation is adopted. Should this occur, much trouble, litigation, and retarded development, are sure to result.

Like Medicine Bow, the head of Rock Creek valley is cut up with numerous small channels, which differ so little in appearance from the ditches that it is difficult to decide which is ditch and which is stream. From Rockdale eastward the creek and these small channels each have a fall of about 100 feet to the mile, and as the banks are exceedingly flat water can be turned upon the meadows at any point by a plow furrow; the water soon cuts away the lighter material, leaving a pebbly channel; ultimately it loses its identity as a ditch and forms a marsh. This is the general style of irrigation on upper Rock Creek.

Ties are run down both streams, and as the channels are very crooked and the current swift, jams occur, which cause the stream to dam up and frequently to make an outlet for itself by forming another channel. Many ditches are thus left dry and, as a consequence, headgates are scarce and when found are of a temporary character. At times when the water is low tie drivers unwarrantably close all headgates and ditches to increase the volume in the stream, causing much hardship, ill-feeling, and some loss to irrigators. If judiciously used there should be sufficient water in the Medicine Bow basin to reclaim all the irrigable land.

Water was exceptionally low the past season on account of the light snow fall of the previous winter, yet Rock Creek, at the Rockdale bridge, on the 10th day of July, carried 51.5 cubic feet per second. The same creek on August 3rd, at Schulte's ranch, near its mouth, gauged nineteen cubic feet per second, which was said to be the lowest known. This water comes chiefly from springs west of Rock Creek station on the railroad. Above this station, on the same date, there was little water in the stream.

On the same date, Medicine Bow above the mouth of Rock Creek gauged only four cubic feet per second. On August 2nd it gauged forty-eight cubic feet per second at the crossing five miles above Difficulty Creek. A large proportion of this water came from Little Medicine Bow. Troublesome and Difficulty Creeks each gauged seven cubic feet on August 1st. There is a surplus of water in the latter streams. On August 6th, Wagon Hound, gauged above its mouth, had a discharge of 3.28 cubic feet. On August 10th, gauged at Elk Mountain post-office, its discharge was 4.5 cubic feet; August 13th, west branch of Medicine Bow above Highland ditch gauged 11.8 cubic feet. The greater part of this water was diverted to the table lands. The bottom lands act as a reservoir and are full of springs, so that the use of water on the uplands is almost compensated for by the return seepage.

Two hundred and twenty ditches were surveyed, having a total length of 246 miles.

NO WOOD RIVER.

No Wood, the main tributary of the Big Horn River from the east, has its rise on the western slope of the Big Horn Range of mountains which bound the Big Horn Basin on the east, and flowing northerly and north-westerly along the western foot of the range, enters the Big Horn Basin at about the geographical center of the Basin.

A peculiar feature of this stream is that throughout its entire course, a distance of perhaps eighty miles, it receives no living tributaries on the west or left bank, all of its feeders, which are numerous and perennial, coming from the mountains to the east.

The reason for this is the fact that all of the country lying between this stream and the Big Horn River is composed of rolling and broken bad lands, which have no living water except a very few alkali springs; the water courses being dry save during the continuance of the infrequent showers that visit this arid waste.

The luxurious growth of the native blue-stem grass, along this stream and its tributaries, coupled with the abundance of water, led to its early occupation by the stock raisers, who for a time had undisputed possession of the country. A half dozen cabins scattered at wide intervals served as headquarters for the cattle companies, and were the only improvements, while the nomadic and proverbially improvident "cow-boy" was the only inhabitant of this agricultural paradise.

Later it was discovered that the rich sandy loam bordering these streams offered most exceptional inducements to irrigators, and it was not long until the homes and improvements of permanent settlers filled the intervals between the widely scattered cabins of the stockmen, and the cattle trails gave place to county roads. Now the valleys along this stream support a population of about 600 prosperous and contented permanent residents; nomadic herds have given place to the stock of ranchmen and tillers of the soil. Agriculture is successfully combined with stock-raising, and the results attained by this community, remote from both transportation and markets, establish beyond question the value and adaptability of this form of agriculture in this State. The mountain ranges on the east provide lasting summer pasturage; while the irrigable valleys produce an abundance of forage for feeding through the mild winters.

The arable land along these streams is comprised within narrow valleys, there being no large areas lying in one body suitable for colonization. All kinds of small grain are grown with remarkable success. Fields of corn were seen fully equal to that grown in the states east of us.

Properly cultivated, wheat returns an average yield of thirty to forty bushels to the acre; oats about seventy-five bushels. The vegetables seen while making these surveys were unexcelled in yield and quality, and the variety was in pleasing contrast to the experience of the early part of the season. It has been already demonstrated that small fruit can be grown with gratifying success.

The ditches on this stream and its tributaries were found to be generally in fair condition. Only about one-third of them are provided with headgates, so that very little control over the flow of water can be had; this results in much waste and often in damage to crops and land.

Alfalfa is the principal cultivated crop in this section of the Basin, and soil and climate being well adapted to its growth, three and sometimes four crops are cut each season, yielding from five to seven tons per acre. As high as 1,000 pounds of alfalfa seed to the acre has been raised.

One hundred and eight ditches were surveyed, having a total length of 119 miles.

The discharge of No Wood River, measured on the 25th day of September, at a point below all tributaries and all diversions, was 210.70 cubic feet per second. This measurement of the water which runs to waste, taken in connection with the measurements of the State Engineer's office in 1892, shows that there is water enough in this stream to permit of a large increase in the irrigated acreage. In addition to its normal flow there are few sections of the State which offer equal possibilities for the economical storage of water. The mountains west of Clouds Peak are filled with morainal lakes. It has been estimated that 150 can be counted from its summit. Many of these can be utilized to store surplus waters at small cost, and as they are surrounded by granite walls they will be free from the dangers which beset reservoir construction in many other sections.

Several canals to water from 2,000 to 10,000 acres of land have been projected, and the preliminary surveys made seem to indicate that these projects are feasible. Altogether the No Wood and its tributaries is a promising agricultural district.

STREAM MEASUREMENTS IN 1896.

A daily record of stream heights was maintained at eight stations in Wyoming this year. Two additional stations were maintained during a portion of the year. Five of these were located in the southern half of the State and five in the northern. The discharges of these streams were measured at intervals throughout the season, sufficient measurements being made on seven to permit of the preparation of tables giving the discharges for the various depths recorded by the observers.

A series of gaugings of Clear Creek was made in 1893. The discharge table prepared from these is regarded as sufficiently accurate and has been used in the computation of the present season's flow. The following table gives the location of these stations, the streams on which located and the names of the observers:

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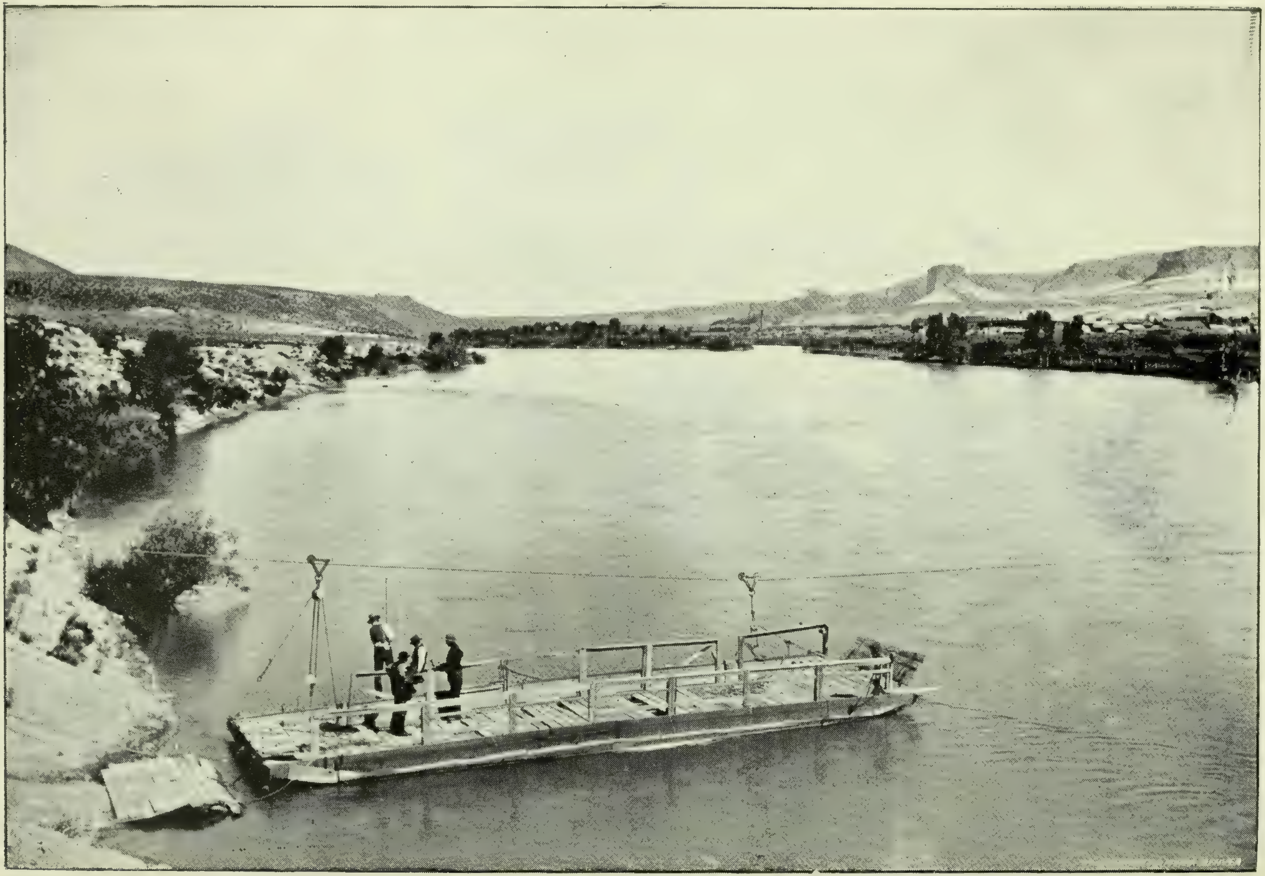
FERRY ON BIG HORN RIVER, WHERE STREAM WAS GAUGED.



METHOD OF GAUGING GREEN RIVER.

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STREAM.	STATION	OBSERVER.
Black's Fork River	Granger	Henry Lingelbach.
Green River	Green River City	Wm. Slater.
Laramie River	Wood's Landing	S. S. Wood.
Laramie River	Uva	J. A. Carley.
North Platte River	Orin Junction	P. J. Burns.
Big Goose Creek	Sheridan	Felix O'Connor.
Little Goose Creek	Sheridan	Felix O'Connor.
Clear Creek	Buffalo	Fred Bond.
Shoshone River	†Corbett	P. Kelly.
*Shoshone River	†Marquette	D. F. James.

In the measurement of discharges a current meter has been used wherever this was possible. Where it was not, then the surface velocity has been determined by floatsand the mean velocity computed.

Two patterns of meters have been employed, the Colorado meter, made after the designs of E. L. Nettleton, ex-State Engineer of Colorado, and the Price acoustic meter, made by W. & L. E .Gurley, of Troy, New York. The first meter works well when in perfect order, but the tripping device is defective and is liable to become deranged when used in streams carrying large quantities of sediment.

The distinguishing feature of the Price meter is the absence of any recording mechanism, the revolutions of the current wheel being indicated by the tapping of a small hammer on a metal diaphragm at the bottom of the hollow rod to which the meter is attached when in use, this hammer striking the diaphragm every tenth revolution of the wheel. The excellent construction of this meter, and the lessened friction which the absence of a recording device secures, insures good results where the meter can be used at all. This cannot, however, always be done. Several times last season it had to be laid aside and floats used because the strokes of the hammer could not be counted. In the deep, swift currents of our larger streams the noise of the current almost drowns the tap of the hammer, while the sound, even when perceptible, can scarcely be distinguished from that produced by the vibrations of the instrument itself, especially when held against

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* South Fork. † Not maintained throughout the season.

the side of a boat or other object to steady it in a rapid current. For use in ditches and canals with low velocities, or in shallow water, the work of this instrument is satisfactory, but it will need modification to adapt it to the measurement of our large rivers.

The selection of streams to be measured was governed largely by the wishes of the Geological Survey. The needs of the State Engineer's office and of this department are not exactly identical, the Geological Survey desiring to measure streams having a perennial flow and sufficient volume to make them of more than local importance, while the Engineer's office most needs the records of streams having a fluctuating flow and whose waters are wholly or largely appropriated. The location of stations had also to be governed in part by the opportunity to secure an observer for daily readings and by the necessity of having a station accessible for the party who made the gaugings. The following brief description gives the location of these stations and the reasons for their selection:

BLACK'S FORK GAUGING STATION.

The most westerly of the southern stations is on Black's Fork River, in Uinta County. The last five years has seen a great increase in the importance of water rights from this stream. The ease with which ditches can be built and the large area of irrigable land to be reclaimed have led to the inauguration of four large projects, besides the construction of a large number of small ditches diverting water from the main stream and from Smith's Fork, one of its principal tributaries. The only project in the southern half of the State being carried out under the Carey Act is on this stream, and the four large ditches on which construction has either begun or arrangements for such construction practically completed, will reclaim more land than is now in process of reclamation on any other stream in southern Wyoming. It is of the utmost importance, therefore, that we know whether or not there is sufficient water to supply their needs.

The gauging station is located near the Union Pacific Railway bridge, three miles west of Granger, the junction of the Union Pacific and Oregon Short Line railways, the section foreman at this point being engaged to make the daily readings of stream heights.

Black's Fork is so crooked and varies so much in width and grade that a satisfactory location for its measurement is hard to find. The point chosen is about 300 feet above the bridge. Here the banks are high enough to confine the flow to one channel during the high water of ordinary years, and there is as long a section where the current is regular and uniform as can be found anywhere within reasonable distance of the station. In making the measurements on this stream, as on all streams, a stout cord was stretched from bank to bank and the average velocity determined at points ten feet apart across the stream.

The first measurement on this stream was made with floats, it being found impossible to use a meter on account of ice and on account of severe cold which caused the instrument to freeze when taken out of the water. Subsequent to this the measurements were made with Price's meter. When the stream was too high to permit of wading an Acme folding boat was used, being attached to a cord stretched across the stream. An attempt to measure this stream in June failed, owing to the unusual high water, persons familiar with the stream saying that it was higher than ever seen before in twenty years. At the time of this measurement the stream overflowed its banks and in many places covered the entire bottoms along its borders. At the railroad bridge, 300 feet below the station where the gauge rod was placed, the current was confined and greatly restricted by the embankments leading to the bridge and by a center pier. As a result of this there was considerable back water above the fill and piers, and the stream had greater depth and velocity between the piers than elsewhere. It also resulted in a slower current and in eddies above. The back water and eddies extended up to the gauging station at extreme high water. From such tests as could be made with floats it was concluded that the mean velocity at this stage did not exceed five feet per second. Later in the season, when the curve of discharge was prepared, the cross section at the gauging station multiplied by five was taken as the maximum discharge. This is only an approximation but it is believed to be reasonably near the truth. It produces a reverse discharge curve, but this is the result to be expected from the channel's contraction.

The irregular outline of the stream's channel, and the numerous intervening and uncertain conditions, prevents a determination of the exact point where the change of curvature begins, and no equation could probably be deduced which would represent the actual conditions.

As this stream is used to float ties in summer there was no way of protecting a gauge rod at the point where measurements were made. It was, therefore, fastened to the center pier of the railroad bridge. This location had the further advantage of being convenient for the observer, who was enabled to take the daily readings without interfering with his work. The accompanying diagram shows the location of the gauge rod. Its bench mark is a cross cut in the top stone on the north end of the pier to which the rod is fastened, and is 4.63 feet above the ten foot mark on the rod.

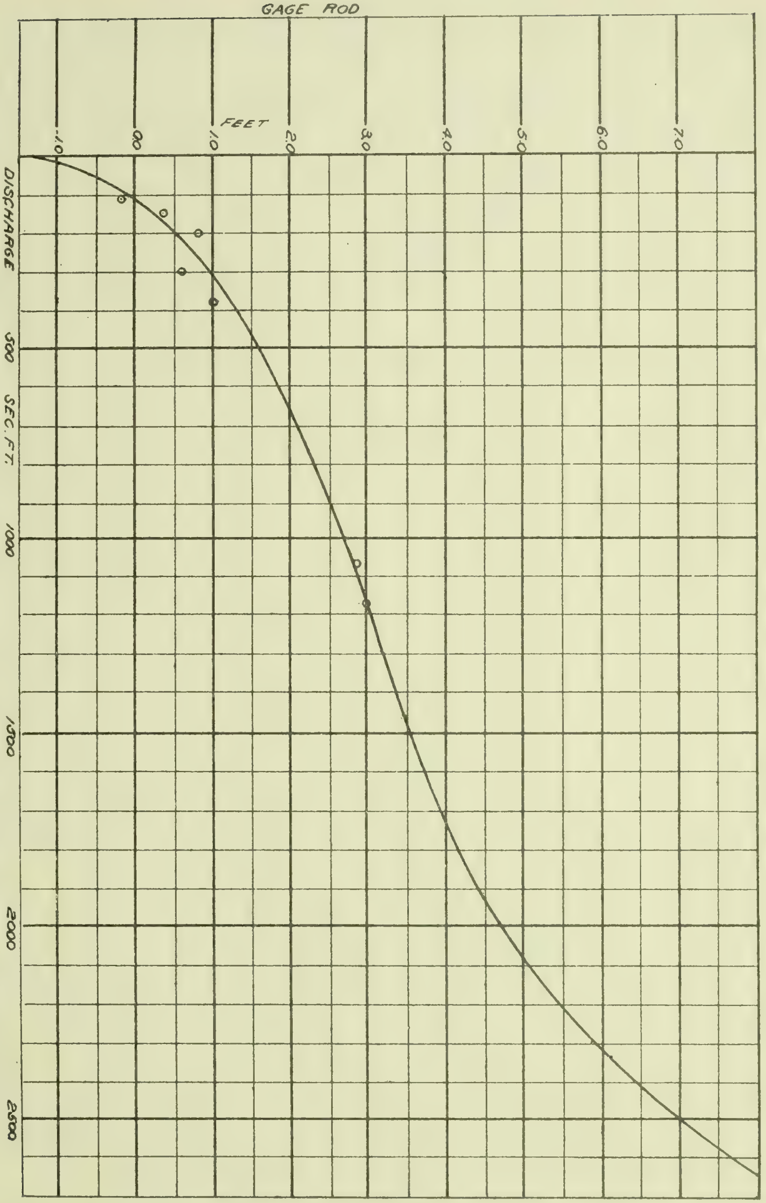


DIAGRAM showing the discharge, in cubic feet per second, of Black's Fork River at Granger, for different depths of water on the gauge rod.

DISCHARGE TABLE FOR BLACK'S FORK.

1896.

Computed from Gaugings 1 to 7.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
—1.3	0	1.2	365	3.7	1,600	6.2	2,370
—1.2	10	1.3	390	3.8	1,650	6.3	2,390
—1.1	15	1.4	425	3.9	1,690	6.4	2,405
—1.0	20	1.5	460	4.0	1,730	6.5	2,420
—.9	25	1.6	500	4.1	1,775	6.6	2,440
—.8	30	1.7	540	4.2	1,815	6.7	2,460
—.7	38	1.8	570	4.3	1,855	6.8	2,475
—.6	45	1.9	610	4.4	1,895	6.9	2,490
—.5	55	2.0	650	4.5	1,930	7.0	2,505
—.4	65	2.1	700	4.6	1,965	7.1	2,520
—.3	75	2.2	745	4.7	2,000	7.2	2,535
—.2	85	2.3	790	4.8	2,030	7.3	2,548
—.1	95	2.4	830	4.9	2,060	7.4	2,560
0.0	101	2.5	880	5.0	2,095	7.5	2,575
0.1	125	2.6	930	5.1	2,125	7.6	2,590
0.2	140	2.7	980	5.2	2,155	7.7	2,605
0.3	160	2.8	1,040	5.3	2,175	7.8	2,615
0.4	175	2.9	1,095	5.4	2,200	7.9	2,625
0.5	195	3.0	1,155	5.5	2,225	8.0	2,640
0.6	215	3.1	1,220	5.6	2,250	8.1	2,650
0.7	240	3.2	1,300	5.7	2,270	8.2	2,665
0.8	260	3.3	1,360	5.8	2,290	8.3	2,675
0.9	285	3.4	1,430	5.9	2,310	8.4	2,685
1.0	315	3.5	1,500	6.0	2,335	8.5	2,695
1.1	340	3.6	1,550	6.1	2,350		

GREEN RIVER GAUGING STATION.

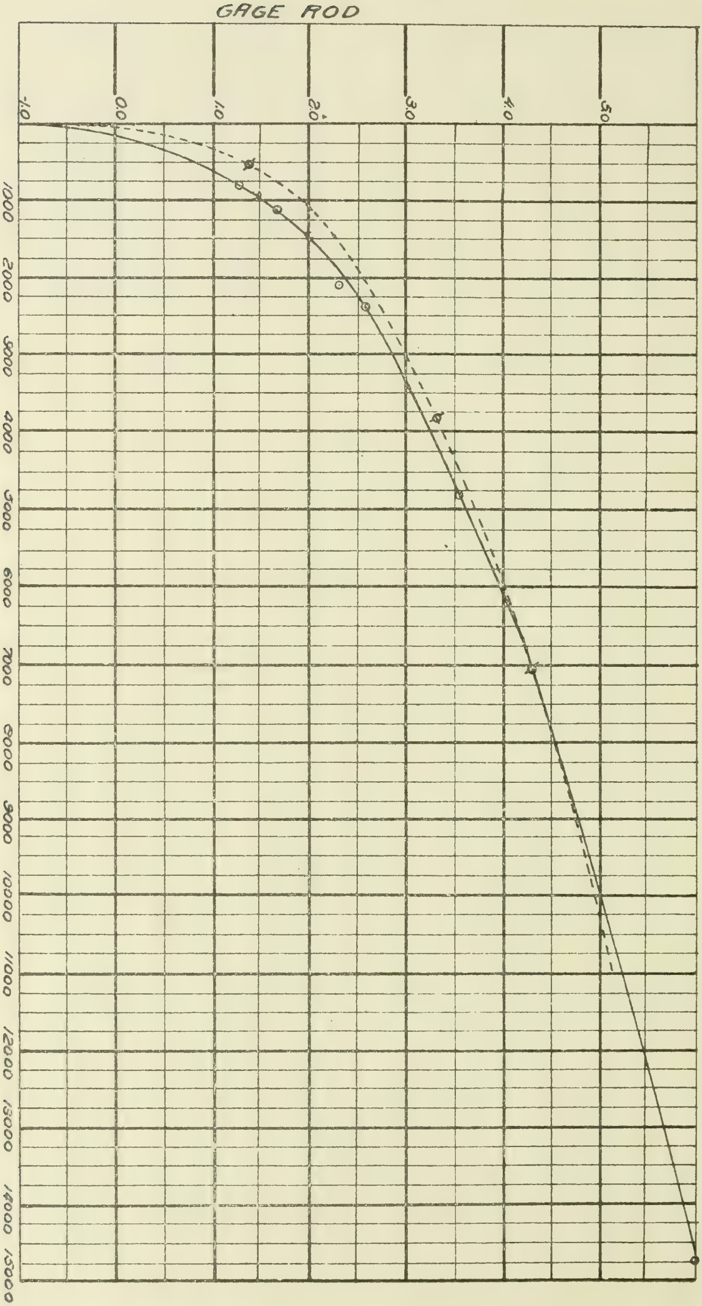
This station is located at Green River City, the gauge rod being fastened to some timbers at the pump house, near the east side of the railroad bridge. An island divides the stream into two channels, which prevents the possibility of obtaining reliable measurements at this place. The gaugings were, therefore, made at the ferry, one mile below. When they were begun a ferry boat was in use and afforded a very convenient means of obtaining measurements at high water, the method of its use being shown on the accompanying illustration. Owing to an accident it was not in use this year and we were compelled to make use of the canvas folding boat. At the highest stage of water, on June 19th and July 7th, it was impossible to use the boat, owing to the swift current and the large amount of driftwood and brush in the stream. The measurement on June 19th, obtained by means of floats, was made at the railroad bridge and can only be regarded as approximation. That on July 7th was made by floats at the ferry. A traveling stage was suspended from the ferry cable and floats dropped from it. Bottles, filled so as to cause them to float upright and all but the neck submerged, were used.

DISCHARGE TABLE FOR GREEN RIVER.

1896.

Computed from Gaugings 1 to 6.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
0.0	249	1.6	1,000	3.2	3,840	4.8	9,320
0.1	260	1.7	1,070	3.3	3,960	4.9	9,800
0.2	300	1.8	1,160	3.4	4,200	5.0	10,220
0.3	330	1.9	1,280	3.5	4,440	5.1	10,660
0.4	370	2.0	1,400	3.6	4,700	5.2	11,100
0.5	400	2.1	1,580	3.7	5,000	5.3	11,540
0.6	450	2.2	1,760	3.8	5,260	5.4	12,000
0.7	500	2.3	1,950	3.9	5,580	5.5	12,440
0.8	550	2.4	2,160	4.0	5,940	5.6	12,860
0.9	620	2.5	2,400	4.1	6,300	5.7	13,300
1.0	650	2.6	2,550	4.2	6,700	5.8	13,700
1.1	700	2.7	2,730	4.3	7,100	5.9	14,150
1.2	750	2.8	2,840	4.4	7,540	6.0	14,580
1.3	800	2.9	3,120	4.5	8,000	6.1	15,000
1.4	860	3.0	3,320	4.6	8,440	6.2	15,460
1.5	930	3.1	3,520	4.7	8,900		



DISCHARGE CURVES

FOR GREEN RIVER. GAGE ROD AT GREEN RIVER, WYO.

1895----1896

THE LARAMIE RIVER GAUGING STATIONS.

Two stations were maintained on the Laramie, one of these being above all important ditches in the State and the other below all such ditches. These two stations were established because of the peculiar and important water-right problems which this stream presents. A discussion of these is worthy of insertion in this report.

The Laramie is an inter-state stream, rising in Colorado about twenty-five miles south of the Wyoming boundary and near the source of the Poudre River, one of the important irrigation streams in Colorado. The loftiest mountains which drain into this river are in Colorado, so that the greater part of the water supply for late irrigation comes from that state. The most important tributary in Wyoming, the Little Laramie, is fully appropriated by the irrigators along its banks.

The irrigated lands along this stream are separated into three divisions: the valley in Colorado, which is about twenty miles long and from one-half to two miles in width; the Laramie Plains in Wyoming, separated from the valley lands in Colorado by a canon about eight miles long, and the lower valley which extends from the mouth of the stream to the eastern base of the Black Hills, and which is separated from the Laramie Plains district by the canon through which the river penetrates these hills. In elevation these lands range from 8,000 feet for the valley lands in Colorado, 7,000 feet for the plains land in Wyoming, to from 4,800 to 4,600 feet along the lower portion of the stream.

The ditches which make this stream notable are not, however, those which irrigate the lands along its banks, but those which divert its waters away from these lands. Of these there are two. The first is in Colorado, and its purpose is to turn the headwaters of the stream into the Poudre for the use of irrigators along that stream in Colorado. The ditch which does this, while not large, is an interesting work because of the precipitous nature of the country through which it has been built and which rendered its construction costly and difficult. The headgate of the ditch is over 9,000 feet above sea level and for the entire length of five miles is cut along granite cliffs or through dense tracts of timber. When full it will divert a little over one hundred second feet and as none of this returns as seepage its loss is a serious one to those having prior rights in Wyoming. When measured in June last the entire stream, at the headgate, was being diverted into this ditch, which was carrying about seventy second feet. The discharge at Wood's Landing the following day was one hundred and ninety-seven second feet, so that the appropriators in Wyoming were losing at that date about one-fourth of the water supply of the stream. A number of large appropriations in Wyoming are prior to this diversion in point of time and the flow of the stream was largely appropriated before any of the ditches were built in Colorado. Hence, the method by which priorities are to be adjudicated and rights enforced across state boundaries assumes great interest and importance.

The second ditch which diverts water from the immediate valley of this stream is the canal of the Wyoming Development Company. This, however, does not take it out of the drainage basin of the river. By means of a tunnel 3,800 feet long the water of the Laramie is turned into Blue Grass Creek, a tributary of Sabille, which in turn empties into the Laramie about thirty miles below where the water is originally diverted. Bordering Sabille Creek is an extensive and fertile plateau, of which nearly 60,000 acres can be irrigated. As its elevation is less than 5,000 feet above sea level, or nearly 1,500 feet below the mean elevation of the southern half of the State, its reclamation is of more than local importance.

The stations maintained during the past two years were established to show, first, the volume of water received from Colorado, which is practically equivalent to that received from the melting of winter snows. This will give an approximate measure of the area which can be reclaimed without resorting to storage.

The second station shows the water which runs to waste and gives an approximate idea of the extent to which the reclaimed area can be extended by the use of storage. The records of 1896 cannot be taken, however, as indicating the normal possibilities of this stream, because the season has been an unusual one, distinguished alike for the light snow fall of last winter and the extent to which the summer supply has been augmented by local rains. No year since irrigation began in Wyoming has witnessed as many cloud bursts or rain storms during the latter part of the irrigation season as the one just closed. As many of these storms fell below the location of any storage reservoirs, the record at Uva gives an exaggerated idea of the storage possibilities. Probably not one-half of the water which passed this station after June 30th could have been utilized had all the storage basins along the stream been improved, because of the location where the storms occurred.

WOOD'S LANDING GAUGING STATION.

The upper of the Laramie River gauging stations is at Wood's Landing, the gauge rod being fastened about 400 feet above the wagon bridge which crosses the stream at this place. It is fixed to a four-by-four post set perpendicular, the foot firmly imbedded in the river bottom and the top braced to adjacent trees on the river bank. Measurements were made from the wagon bridge whenever the stream was too high to be waded. The bridge rests upon two channel piers, which are rough log cribs filled with rock. These cause serious eddies in the three openings under the bridge, so that it was found necessary to build a projecting walk on the upstream side to enable measurements to be made far enough away from these piers to be out of the way of their influence.

The bottom of the river at this place is composed of large granite boulders, and while this secures an unchanging channel it makes it quite difficult to get a correct and uniform measurement of the cross section, especially at low stages of water. A measurement of depth at one point may show six inches of water, while if taken a foot on either side of this point the depth might be twice or three times as great. This was the most serious difficulty encountered in securing low-water gaugings on this stream, and this is the probable cause of the variation shown in the results of a number of these measurements.

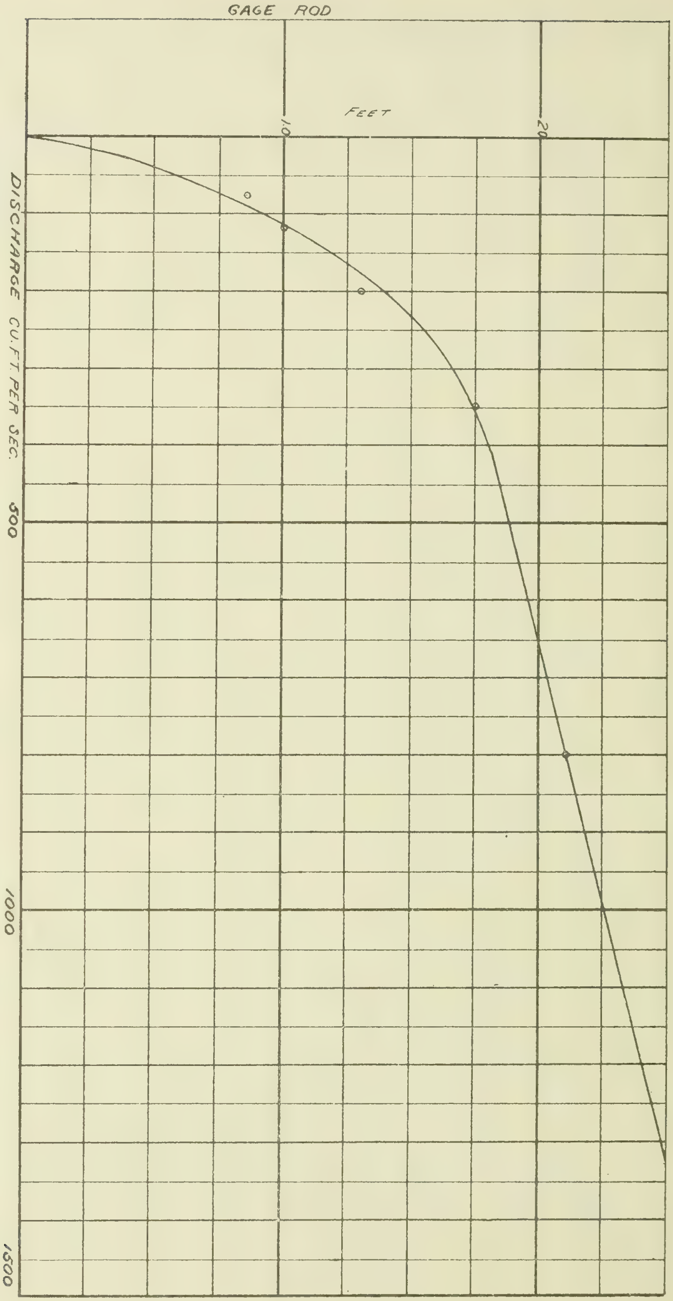


DIAGRAM showing the discharge, in cubic feet per second, of the Laramie River at Wood's Landing, for different depths of water on the gauge rod.

DISCHARGE TABLE FOR LARAMIE RIVER AT WOOD'S.

1896.

Computed from Gaugings 1 to 7.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
0.0	0	1.0	120	2.0	691	3.0	1,951
0.1	4	1.1	140	2.1	817	3.1	2,077
0.2	11	1.2	165	2.2	943	3.2	2,103
0.3	19	1.3	190	2.3	1,069	3.3	2,229
0.4	29	1.4	220	2.4	1,195		
0.5	38	1.5	255	2.5	1,321		
0.6	49	1.6	295	2.6	1,447		
0.7	62	1.7	350	2.7	1,573		
0.8	76	1.8	435	2.8	1,699		
0.9	91	1.9	565	2.9	1,825		

UVA GAUGING STATION.

This station is on the line of the Cheyenne & Northern Railway. The permanent rod is fixed to the side of one of the piers which support the railroad bridge. It was placed here as the most convenient point for the railroad section foreman to take the readings. The stream measurements could not be made from this bridge, owing to the irregular current of the river. These were made at the wagon bridge, half a mile below. When the stream was too high to be waded a folding canvas boat was used, it being held in place by a cord stretched from one abutment of the bridge to another. In all these measurements the velocities and depths were taken every ten feet across the stream. The river at this point is quite crooked, and as it flows through an alluvial deposit it changes its channel frequently. The channel also tends to scour out when the stream is high and fill up when it falls.

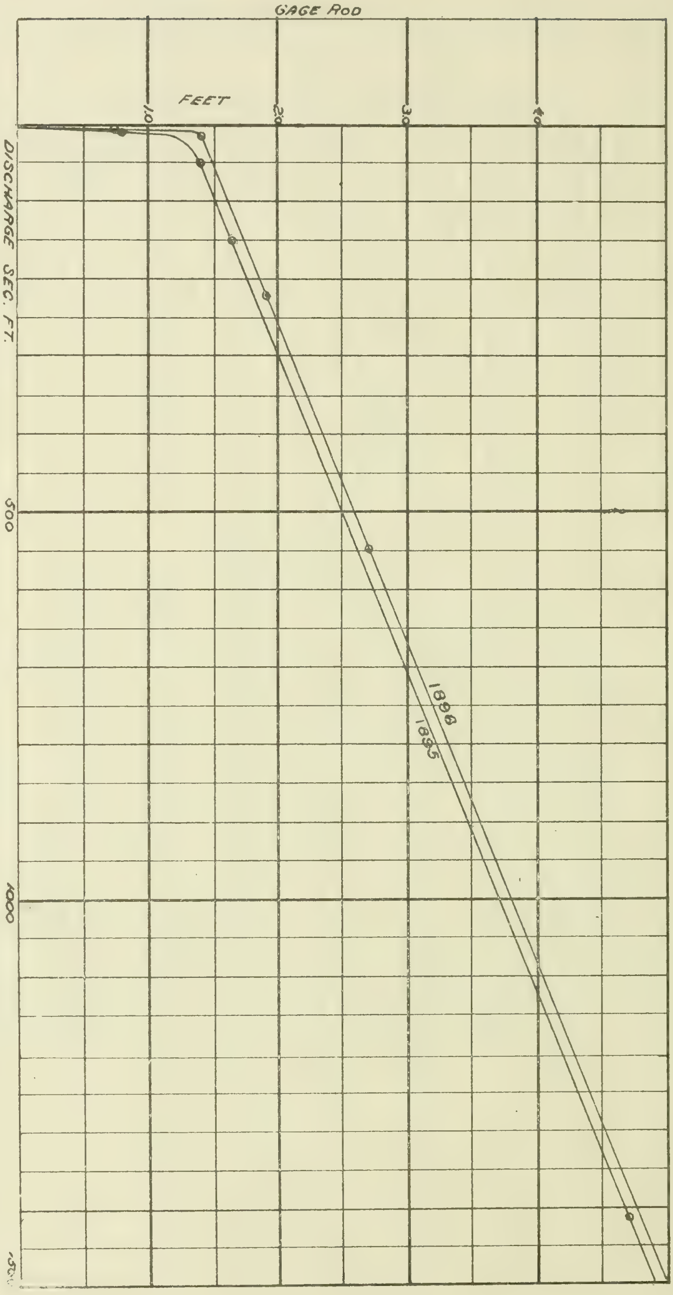


DIAGRAM showing the discharge, in cubic feet per second, of the Laramie River at Uva, for different depths of water on the gauge rod.

DISCHARGE TABLE FOR LARAMIE RIVER AT UVA.

1896.

Computed from Gaugings 1 to 4.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
0.0	0	1.5	50	3.0	675	4.5	1,380
0.1	1	1.6	92	3.1	716	4.6	1,320
0.2	2	1.7	134	3.2	757		
0.3	3	1.8	176	3.3	798		
0.4	4	1.9	218	3.4	839		
0.5	6	2.0	260	3.5	880		
0.6	7	2.1	302	3.6	920		
0.7	8	2.2	344	3.7	960		
0.8	10	2.3	386	3.8	1,000		
0.9	11	2.4	428	3.9	1,040		
1.0	12	2.5	470	4.0	1,080		
1.1	13	2.6	511	4.1	1,120		
1.2	14	2.7	552	4.2	1,160		
1.3	15	2.8	593	4.3	1,200		
1.4	16	2.9	634	4.4	1,240		

NORTH PLATTE GAUGING STATION.

The gaugings of the North Platte have all been made at the bridge of the Cheyenne & Northern Railway where it crosses the river near Orin Junction.

This point is below all of the principal tributaries of the stream, save the Laramie River, the station at Uva being located upon the latter about eighteen miles above its mouth.

The rod is fixed on the south side of the mid-channel pier of the bridge, in a protected situation; it is connected with a bench mark on shore. The bed of the channel at this point is composed of heavy gravel and sand, the cross sections being quite uniform; the channel is straight for some distance above and below the station; the fall is slight, and these conditions combine to insure as stable and uniform a cross section as can be expected in large streams of this character.

The bridge pier divides the stream into two permanent channels; at high water there is a third, west of the second pier, across which the bridge rests on piles. At certain stages of the water a long cobble bar, running down to the bridge, divides this into two channels, making at times four channels in all.

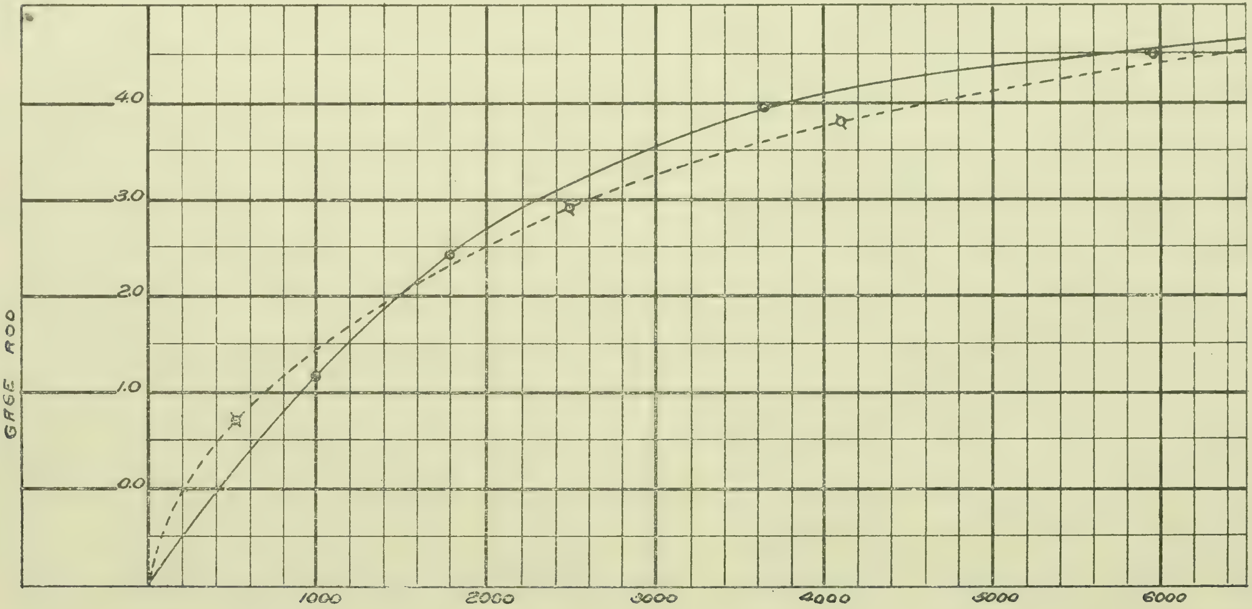
The folding canvas boat was utilized for obtaining the measurements at this station, a strong line being stretched from pier to pier on the upper side; the soundings were taken and the velocities determined directly under the bridge from the side of one pier to the next. The current meter was used in all gaugings at this station. Some difficulty was experienced at times in obtaining satisfactory measurements of the third channel. The method pursued for the other two channels cannot be followed here on account of the piles which support the railway track. There being no means of stretching the line so that the boat can be used above the bridge it had to be dropped below; but the numerous piles interrupt the uniformity of the current in such a way as to make the result somewhat unsatisfactory. This difficulty can be remedied by fastening projecting scantlings to the upper side of each set of piles upon which a foot board may be laid and the current measured from above instead of below.

The value of the record obtained at this station is due to the fact that below this point there are no important diversions of water from this stream, and the water passing this station is, therefore, the volume which, so far as Wyoming is concerned, runs to waste.

DISCHARGE CURVES

FOR THE NORTH PLATTE RIVER. GAGE ROD AT ORRIN, WYOMING.

1895.... 1896——



DISCHARGE TABLE FOR NORTH PLATTE RIVER.

1896.

Computed from Gaugings 1 to 4.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
0.0	400	1.6	1,230	3.2	2,500	4.8	7,000
0.1	440	1.7	1,300	3.3	2,600	4.9	7,450
0.2	500	1.8	1,360	3.4	2,720	5.0	7,850
0.3	540	1.9	1,430	3.5	2,860	5.1	8,300
0.4	600	2.0	1,500	3.6	3,000	5.2	8,700
0.5	650	2.1	1,560	3.7	3,160	5.3	9,150
0.6	700	2.2	1,620	3.8	3,320	5.4	9,600
0.7	750	2.3	1,690	3.9	3,520	5.5	10,000
0.8	800	2.4	1,760	4.0	3,740	5.6	10,450
0.9	850	2.5	1,840	4.1	4,000	5.7	10,850
1.0	900	2.6	1,920	4.2	4,360	5.8	11,200
1.1	950	2.7	2,000	4.3	4,740	5.9	11,650
1.2	1,000	2.8	2,095	4.4	5,240	6.0	12,000
1.3	1,050	2.9	2,195	4.5	5,650	6.1	12,450
1.4	1,100	3.0	2,295	4.6	6,150		
1.5	1,160	3.1	2,395	4.7	6,600		

CLEAR CREEK STATION.

The station on Clear Creek is located about four miles west of Buffalo, Wyoming, on what was formerly part of the Fort McKinney Military Reservation. It is above all ditches distributing water directly to irrigators, but below two which turn water from the North Fork of Clear Creek into French Creek for the use of irrigators along that stream.

Gaugings of Clear Creek were begun in 1889, in which year the City of Buffalo and Johnson County united in constructing a substantial measuring flume as an aid to more accurate measurements by the State Engineer. This flume was afterwards purchased by the State and enjoys the distinction of being the only State property of this character. It is a substantial structure twenty-four feet long, thirty feet wide with sides seven feet high, with side wings and a pitched apron at the up stream end. The floor is set level in all directions, the up stream edge being even with the bottom of the creek and the lower three or four inches above. Although subjected to rough usage from the floating of cord wood and timber down the stream, it is still in first class condition and permits of more accurate measurements than can be obtained at any other station in the State.

The construction of this flume had its origin in a controversy over water rights, which a shortage in 1889 made acute, and in the settlement of which accurate measurements were a necessity. Being so far from the town of Buffalo, it is at an inconvenient point for observations, the nearest observer living about four miles away. This makes daily readings of the gauge rod out of the question, and for the past two years a Carpenter Water Register, which keeps an automatic record and only requires winding once a week, has been used with fairly satisfactory results.

The controversy which led to the establishment of this station, grew out of the diversion of water from Clear Creek into French Creek. The two ditches which were built for this purpose are located at a remote point in the mountains at an elevation of about 9,000 feet, almost up to timber line. None of the water thus diverted returns to the stream until the mouth of French Creek is reached, a distance of about eighteen miles from where turned out. In this distance there are eight important ditches, which water several thousand acres of land, supply the City of Buffalo and, before its abandonment, Ft. McKinney.

In 1889 so much water was turned out of the stream that Clear Creek almost ran dry before reaching the City of Buffalo. As there had been no adjudication of rights, there was no means of enforcing priorities, and as the claims of the parties owning the eight ditches, before referred to, aggregated 336 cubic feet per second, or nearly three times the mean discharge of the stream during the irrigating season, those concerned felt impelled to procure some legal protection for their rights. Since its establishment the importance of this station has largely disappeared; the rights to water have been adjudicated, and under the more rigorous requirements of the State law, the claims of all appropriators were largely reduced, so that the amount of water which can be legally diverted does not now seriously threaten the rights of appropriators along the portion of the stream where none of the water so diverted returns as seepage.

The diagram showing the discharge of this flume for different depths was the result of a half dozen measurements made in 1893. Owing to the rectangular cross section and satisfactory conditions, this discharge is a mathematical curve, being a parabola whose equation is $y^2 = .00735x$, in which y is the depth shown on the gauge rod and x is the discharge in cubic feet per second.

DISCHARGE TABLE FOR CLEAR CREEK.

1896.

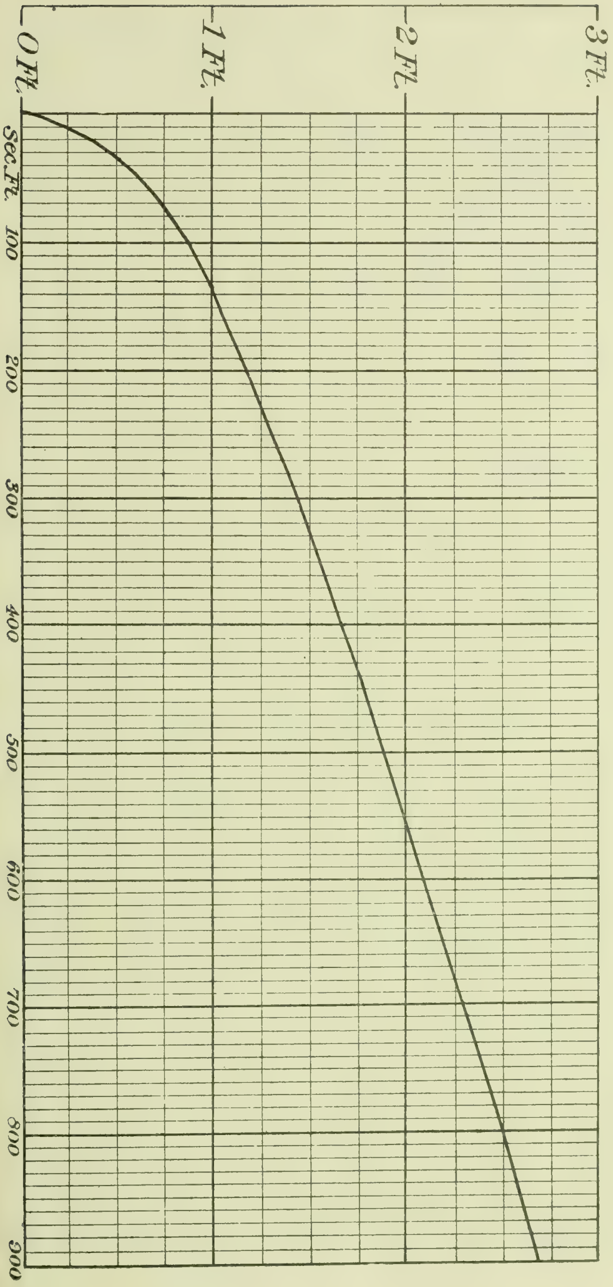
Computed from Gaugings made in 1893.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
.15	2	.80	82	1.55	344	2.30	705
.10	4	.85	92	1.60	365	2.35	729
.15	6	.90	109	1.65	385	2.40	752
.20	9	.95	118	1.70	406	2.45	778
.25	13	1.00	134	1.75	426	2.50	803
.30	17	1.05	150	1.80	447		
.35	20	1.10	169	1.85	475		
.40	25	1.15	189	1.90	504		
.45	29	1.20	209	1.95	529		
.50	33	1.25	228	2.00	558		
.55	39	1.30	246	2.05	582		
.60	46	1.35	266	2.10	607		
.65	55	1.40	286	2.15	632		
.70	64	1.45	303	2.20	657		
.70	73	1.50	323	2.25	680		

DIAGRAM

SHOWING DISCHARGE OF CLEAR CREEK FOR DIFFERENT DEPTHS OF WATER IN MEASURING FLUME.

District No 3, Division No 2, Johnson Co.



GOOSE CREEK STATIONS.

The stations for recording the flow of Big Goose Creek and Little Goose Creek are both within the corporate limits of Sheridan. The two streams unite within the limits of the town, and as the municipal authorities have straightened and improved the channels it is a favorable location for securing observers and for obtaining correct gauging results.

The station on Little Goose Creek is only a few hundred feet above where it empties into Big Goose Creek, hence the record does not show the water supply of the stream but the volume which runs to waste. The station on Big Goose Creek is also below all important ditches, since below the town of Sheridan the valley is narrow and but little land can be irrigated. The records of both these stations give no information of the volume which they supply, but only that which runs to waste. It would be interesting if a record of the entire flow of these streams could be had, since it would furnish some interesting comparisons and a measure of the volume used. This is out of the question at present, for reasons which are worthy of some discussion.

For several years there has been a recognized scarcity of water in Little Goose Creek for late irrigation, only the older priorities being undisturbed throughout the season. The rule is for the Water Commissioner to begin dividing water in June and to continue until September, which makes the rights of late appropriators exceedingly precarious. Several measures have been devised to relieve this shortage. Some of the later appropriators have constructed ditches to divert water from Big Goose Creek. The Peralto, one of the largest ditches in the valley of Little Goose Creek, receives its entire supply from this source. The taking of water from one stream to the other is made easy by the fact that the headwaters of Big Goose Creek drain the summit of the range, while the tributaries of Little Goose Creek begin in the mountains below. The transfer is made far back in the range, the headgates of the diverting ditches being ten miles above where Big Goose Creek emerges from the mountains and the water enters Little Goose Creek nine miles away from and

2,000 feet above the head of the first irrigating ditch taking water from that stream.

The transfer of water from one stream to another is a perplexing question under any conditions, because of the local jealousies which it creates and the difficulty of measuring and dealing with the quantity involved. It is especially so in this instance. It requires nearly a week's journey from Sheridan to visit the heads of the three ditches turning water from one stream to the other, measure their flow and return. Frequent examinations are, therefore, out of the question. It is almost equally difficult and expensive to reach the point where the water turned into Little Goose Creek enters the stream, and the rocky and irregular channel over which it flows makes measurements, of even approximate accuracy, out of the question. It would be too expensive, therefore, to base the division on actual measurements and the Water Commissioner must, as a rule, exercise his best judgment in the disposition of the water so diverted, with but little assistance from the inadequate data which he can secure and with his efforts badly handicapped by opinions and desires of irrigators which vary with the interests and prejudices of those who hold them.

The appropriators of the normal supply naturally fear that the appropriators of water turned into the stream from other sources divert more than they supply, and this opinion becomes very active when early users from the stream are without water while adjoining ditches, built at a later date, have an abundance, simply because of their superior source of supply.

With the growing use of water on Big Goose Creek, and a consequent threatened need to supply the irrigators in its own drainage basin, there has come the opposite complaint that the amount turned into Little Goose Creek is in excess of the appropriators' rights on that stream, and that the surplus is being utilized by those having no legal right thereto. Only actual measurements of the flow of both streams above all ditches, and of the volume transferred, will determine the actual situation and the extent to which these conflicting opinions are founded on facts; but as yet they are not of sufficient practical importance to warrant establishing a station and employing an observer to make daily measurements of the mountain ditches, and without this it is impossible to determine the normal flow of either stream. In fact, it will be difficult to make these measurements when they become indispensable, as they will in time. A station located in the canon of Little Goose Creek would be above ten of its tributaries. These would have to be measured if the total volume of the stream was to be determined, and the diversion of these begins as soon as they leave the mountains, so that only seepage or waste water reaches the main stream.

The stations established at Sheridan, while they throw no light on the question as to how accurately the Commissioner regulates the water turned from one stream to the other, do show the period of scarcity on Little Goose Creek, and whether or not the diversion of water causes any loss to irrigators on the large stream. They are also of value in connection with the subject of storage. During the past four years, surveys have been made which show the existence of a large number of morainal lakes on the head waters of both these streams and late appropriators have already begun their utilization. Before making any large outlay, parties wish to know the length of the period in which water runs to waste and the volume of the surplus which can be thus impounded, and this feature of the record will be most closely studied and of most value.

DISCHARGE TABLE FOR BLACK'S FORK RIVER.

1896.

Computed from Gaugings 1 to 3.

Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge	Gauge Height	Discharge
0.1	0	1.6	24	3.1	154	4.6	480
0.2	0	1.7	27	3.2	172	4.7	510
0.3	0	1.8	31	3.3	186	4.8	526
0.4	0	1.9	36	3.4	205	4.9	565
0.5	0	2.0	40	3.5	225	5.0	595
0.6	2	2.1	45	3.6	245	5.1	630
0.7	3	2.2	50	3.7	267	5.2	680
0.8	4	2.3	60	3.8	286		
0.9	6	2.4	67	3.9	307		
1.0	8	2.5	75	4.0	330		
1.1	9	2.6	86	4.1	357		
1.2	11	2.7	95	4.2	382		
1.3	14	2.8	105	4.3	403		
1.4	17	2.9	127	4.4	430		
1.5	20	3.0	137	4.5	455		

TABLES OF DISCHARGES.

A graphical representation of the discharge of each of these streams has been prepared and is inserted in place of the discharge tables. In connection with each diagram is a tabular summary which gives the mean monthly discharge in cubic feet per second and the total flow for the month in *acre feet.* As the acre foot is a unit not in general use in this State, and may possibly not be understood, it may be stated that it is the volume of water which will cover one acre one foot in depth, or 43,560 cubic feet. The table given below shows the date of maximum and minimum flow for each station and the respective volumes discharged.

TABLE SHOWING DATES OF MAXIMUM AND MINIMUM DISCHARGES IN 1895 AND 1896, WITH THE VOLUMES OF SUCH DISCHARGES IN CUBIC FEET PER SECOND.

NAME OF STREAM	1895				1896			
	Date of Maximum Discharge	Volume, Cu. Ft. per Sec.	Date of Minimum Discharge	Volume, Cu. Ft. per Sec.	Date of Maximum Discharge	Volume, Cu. Ft. per Sec.	Date of Minimum Discharge	Volume, Cu. Ft, per Sec.
Black's Fork					June 1.	2,675	Aug. 14, 15. Sept. 19.	55
Green River	July 1, 2.	7,025	Oct. 9.	229	June 21.	15,460	Oct. 14, 15.	700
Laramie River (Wood's)	June 10.	2,325	Sept. 14-30. Oct. 1, 2, 3, 12, 13, 14, 15, 16, 18, 22-31.	00	May 30.	2,166	Aug. 1, 12, 13, 14, 15, 16.	49
Laramie River (Uva)	June 3.	1,895	Sept. 19-31. Oct. 1-5.	7	June 3.	1,320	Aug. 8.	7
North Platte River	June 3.	13,200	Sept. 20-21.	420	June 3.	12,315	Aug. 20.	775
Big Goose Creek					June 3.	630	Sept. 16.	14
Little Goose Creek					May 30. June 4.	130	June 30.	00
Clear Creek					June 3.	504	Oct. 19.	29

Of the twelve days of maximum discharge given above, six occurred on June 3rd, one June 1st and one on June 4th, so that the flood period of our large streams appears to be very near June first. The record of subsequent years agrees with this. It is a coincidence worth noting that in both 1895 and 1896 the highest water at Uva, on the Laramie, and at Orin, on the North Platte, occurred on the same day of the month. It will also be noted that the period of highest water is the same in the north as in the southern portion of the State, Clear Creek and North Platte having the same date. The flood period on Green River is later than that of any of the other streams included in the table. This is due to the fact that its waters come from the lofty mountains surrounding Yellowstone Park. All of the streams rising in those mountains show the same phenomenon. The measurements of the Stinking Water River, not included in this table because not complete, show that the highest water on that stream occurs between June 20th and July 1st.

The date of least discharge, as shown in these tables, has little signfiicance, because on several of the streams the record is influenced by the diversion of water for irrigation above the station. This is especially true of the stations on the two Goose Creeks and Black's Fork. The following table shows the number of acre feet which each of these streams discharges during the season:

TABLE giving Total Number of Acre Feet Discharged during Period of Measurement, in 1895 and 1896, with Duration of such Period.

NAME OF STREAM	Total Acre Feet.		Time
	1895	1896	
Black's Fork River.....		199,529	Apr. 30 to Sept. 30
Green River............	898,172		May 10 to Sept. 30
		1,258,686	Apr. 20 to Sept. 30
Laramie River (Wood's)		94,463	Apr. 20 to Sept. 30
Laramie River (Uva)...	45,897		Apr. 30 to Sept. 30
		42,398	Apr. 20 to Sept. 30
North Platte River	1,081,547		Apr. 10 to Sept. 30
		937,518	Apr. 20 to Sept. 30
Big Goose Creek........		31,260	Apr. 20 to Sept. 30
Clear Creek		37,623	May 10 to Sept. 30

TIME WHEN WATER IS LOST.

So long as irrigation depends on the natural flow of our streams, much of their volume will run to waste, because the period of maximum flow does not coincide with the time of greatest use in irrigation. It will be seen by examining these diagrams that the discharge for June, in the majority of cases, is far greater than the combined volume of all of the months which follow, and that, in a number of cases, the discharge for May is greater than that of July, August and September. The records included in this report show that the ratio of the June discharge to that of July are as follows:

Green River, 2:1; Clear Creek, 2:1; North Platte, 3:1 and Black's Fork, 5:1.

The high altitude of much of this State retards the beginning of the irrigation season. The records of the tests of duty of water at the Laramie Experiment Farm, made by the State University, do not show that any water was used at all during the month of May. The tests made by the State Engineer in 1889, showed that twice as much water was used in July as in June, and from four to seven times as much in July as in May. It follows, therefore, that on most of our streams the greater part of our water supply has been lost before the irrigation season has fairly begun. This difference between the time of abundance and time of need, gives the subject of storage its great importance. The extension of the reclaimed area on many of our streams will be governed entirely by the measures taken to retain the flood waters of May until they can be utilized in July. This cannot be done on all streams. On many streams storage of water in reservoirs is impossible, because there are no locations adapted to this purpose. One effective means of equalizing the discharge of our streams and of retaining the snows in the mountains ought to have the immediate consideration of every friend of our agricultural development. The preservation of our mountain forests will do more to hold back the melting snows than all the reservoirs which will be built in the lifetime of this generation, and in neglecting to provide for this, we are doing one of two things, either restricting our future agricultural importance or imposing a burden on those who are to follow us, in restoring what has been uselessly and wantonly destroyed through our improvidence and neglect.

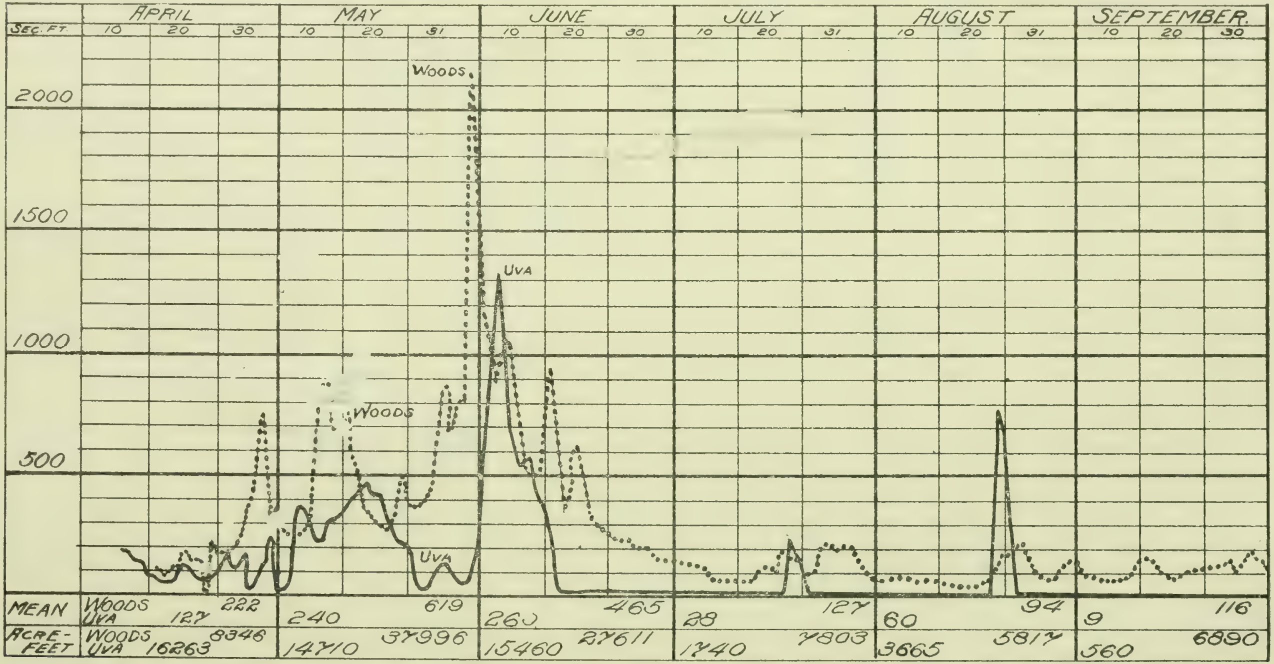
NOTES ON THE WATER SUPPLY OF BLACK'S FORK.

The testimony submitted in proof of appropriators of water from this stream shows one hundred and fifty actual appropriators who are irrigating 18,000 acres of land. The gauging station is below all these ditches and the discharge represents surplus or waste water. The approved permits for ditches, not completed and not represented in the adjudication of rights, described over 160,000 acres of land. Some of this is, doubtless, too broken to be reclaimed, but there is probably 125,000 acres susceptible of reclamation under these projects.

About 200,000 acre feet ran to waste. This, if available when needed, would be sufficient, so that the important problem before the irrigators from this stream is not more water, but a proper distribution of what they have. To do this two things are required. First, the wholesale denudation of the forests at the head of the stream by tie choppers must cease. Second, the storage basins which exist at the head of the stream and two large ones below Fort Bridger ought to be reserved from settlement and private ownership. It is a fortunate fact that the facilities for storage along this stream are altogether exceptional, and measures ought to be taken to preserve them until needed. This may not be long delayed. The volume which ran to waste in 1896 was above the average; in years of normal flow this would be greatly reduced and in seasons of light snow fall the surplus may become a shortage.

LARAMIE RIVER NOTES.

The diagram showing the comparative discharges of the Laramie River at Woods and Uva, above and below the lands irrigated, show that after June 10th the entire available volume of the stream is absorbed. This was the case the present season, as the entire stream was drained at the head of the Wyoming Development Canal. The small volume measured, came in part from the North Laramie; the seepage water from Sabille Creek and from two local storms, one of which occurred on July 18th, and the other on August 19th. None of this water can be stored, because it all enters the stream below any available reservoir sites. Hence, if this season's record is to be a guide, the storage possibilities of the Laramie River are restricted to the water which runs to waste prior to the middle of June. The diagram which shows the discharges at Uva for 1895 and 1896, shows that much more water ran to waste in 1895, but it was all utilized after August 1st.



COMPARATIVE DIAGRAM showing the Discharge of the Laramie River at Wood's and Uva for 1896, with Tables giving the Mean Monthly Discharge in cubic feet per second, and the Total Monthly Flow in ACRE FEET, for each month of the irrigation season. Broken line shows discharge at Wood's, continued line discharge at Uva.

NOTES ON BIG GOOSE CREEK.

There are now one hundred and twenty-two adjudicated rights to water on this stream, with forty-five priorities. This includes the appropriations turned into Little Goose Creek. The total volume appropriated is five hundred cubic feet per second, which is divided between rights for domestic and power purposes and the irrigation of 21,554 acres of land. The record of the following page shows the volume which now runs to waste, and as this amounts in the aggregate to 31,260 acre feet, it is apparently adequate for the reclamation of the 15,000 acres of land for which additional permits have been issued. The small volume of the stream after July first will not, however, permit of the reclamation of this land unless storage facilities are provided to retain some of the water which now runs to waste in May and June.

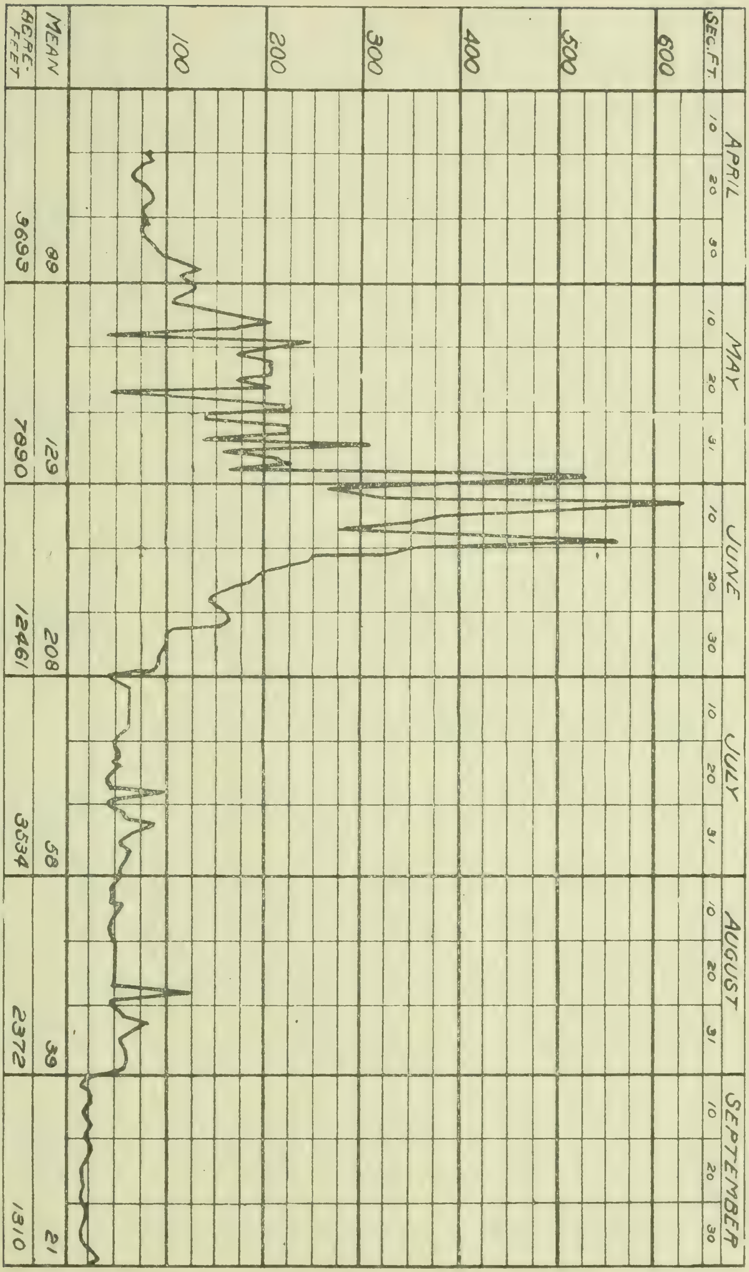


DIAGRAM showing discharge of Big Goose Creek, at Sheridan, Wyo., in 1896, with tables giving the mean monthly discharge in cubic feet per second, and the total monthly flow in ACRE FEET for each month of irrigation season.

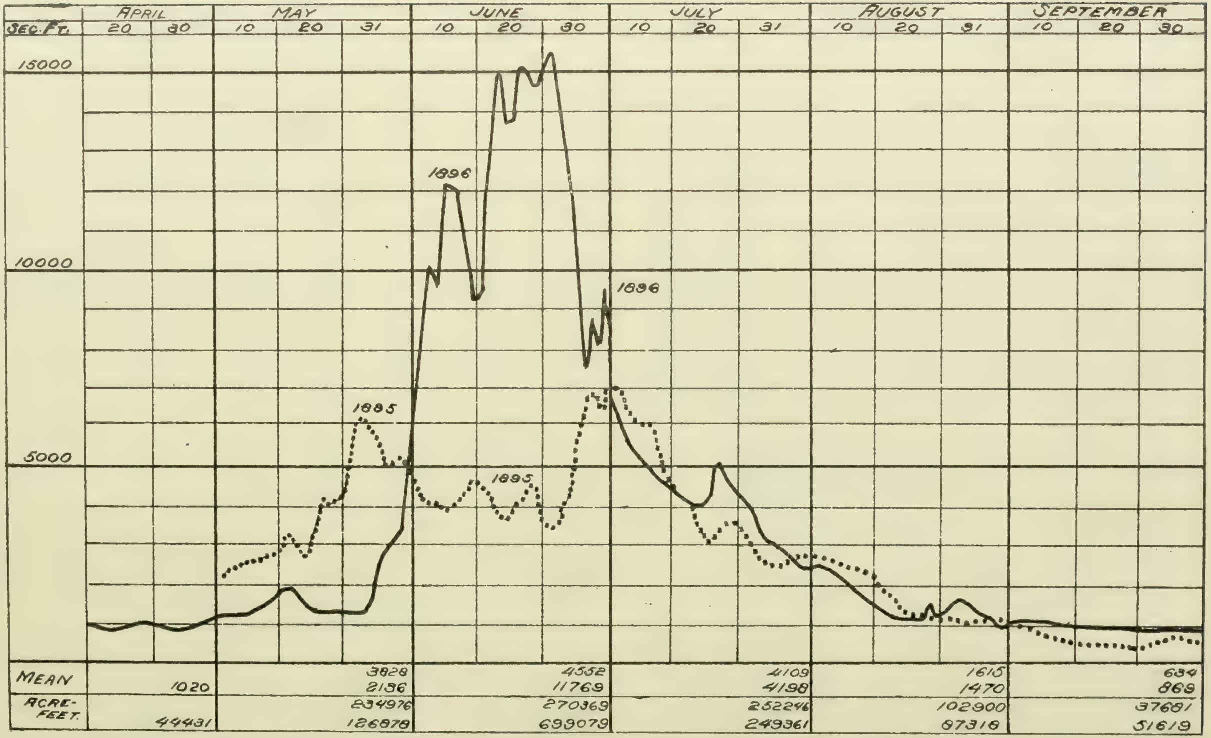


DIAGRAM showing the discharge of Green River, at Green River City, Wyo., in 1885 and 1896, with tables giving the mean monthly discharge in cubic feet per second, and the total monthly flow in ACRE FEET, for each month of irrigation season.

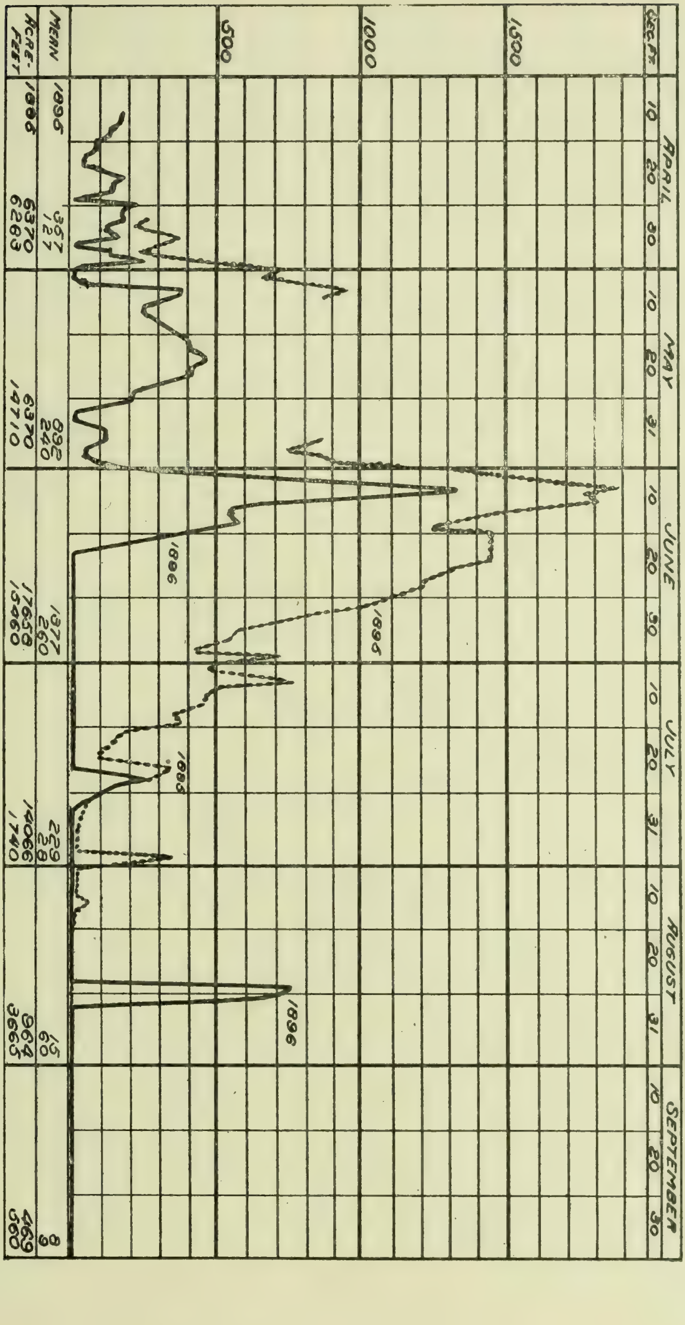
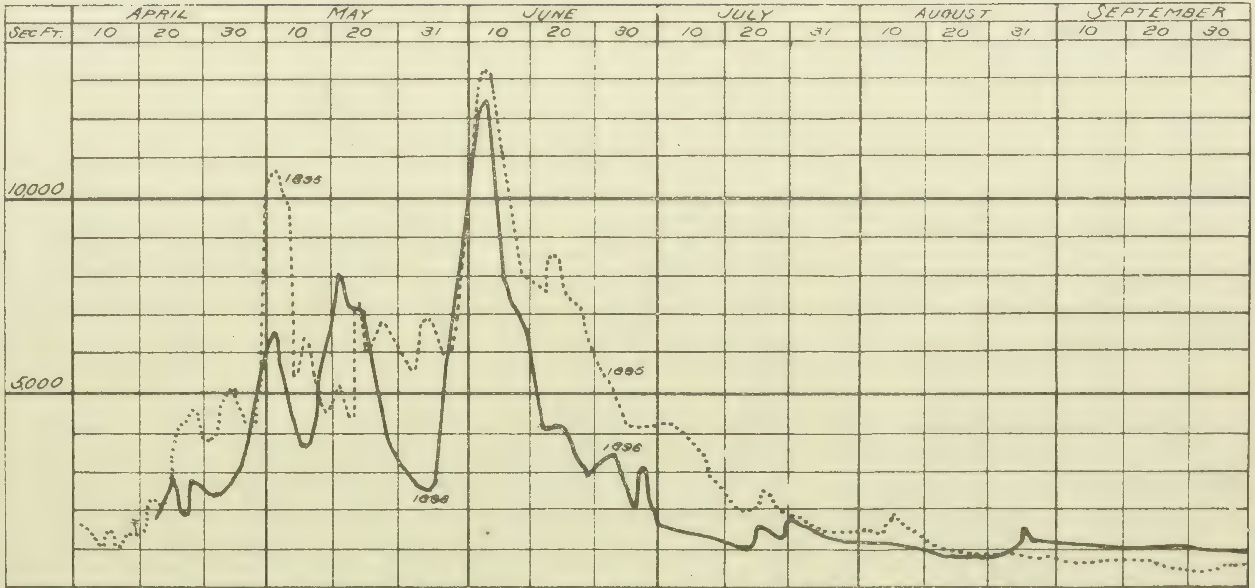


DIAGRAM showing the discharge of Laramie River at Uva, Wyo., in 1895 and 1896, with tables giving the mean monthly discharge in cubic feet per second and the total monthly flow in ACRE FEET for each month of the irrigation season.



		APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
MEAN	1895	3319	6769	7318	2331	1012	532
	1896	3119	5070	5261	1339	1009	874
ACRE FEET	1895	169281	345284	362243	124621	53766	26342
	1896	96620	301158	312553	79586	59795	87856

DIAGRAM showing the discharge of North Platte River at Orin Junction, Wyo., in 1895 and 1896, with table giving the mean monthly discharge in cubic feet per second, and the total monthly flow in ACRE FEET, for each month of the irrigation season.

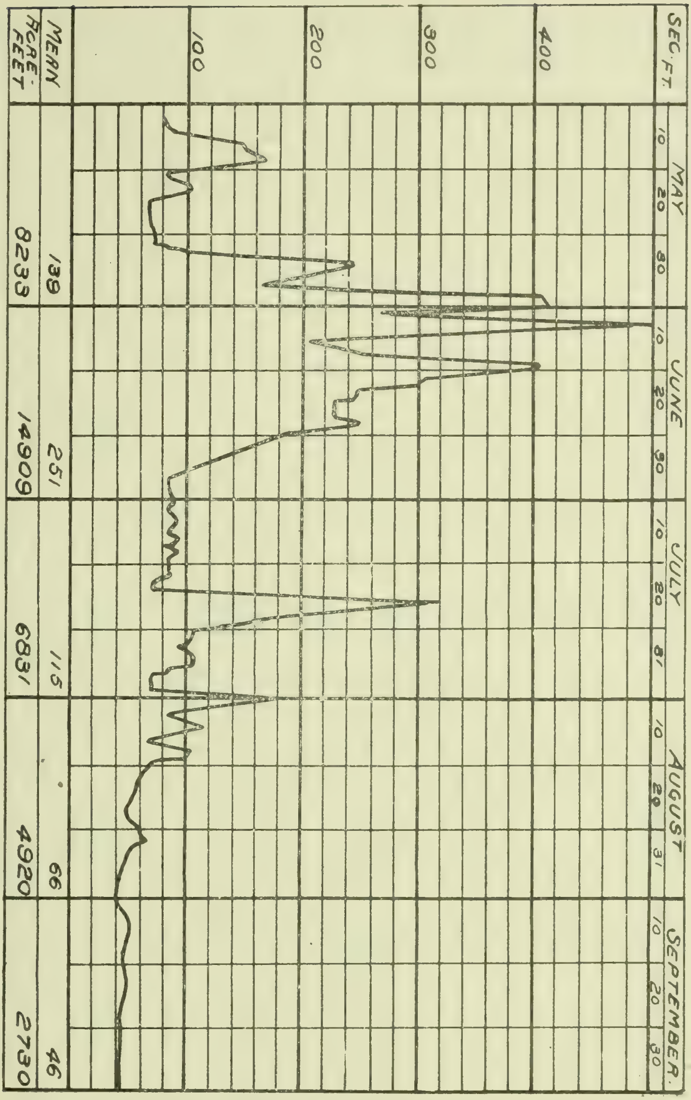
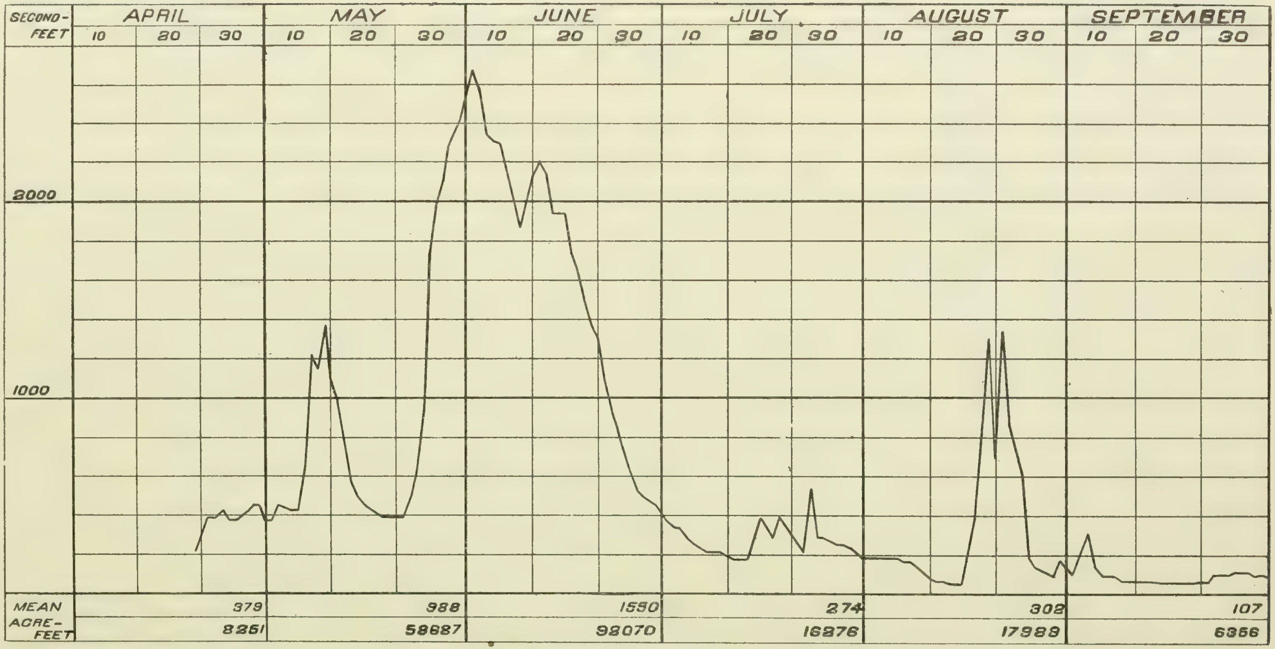


DIAGRAM showing the discharge of Clear Creek near Buffalo, Wyo., in 1896, with tables giving the mean monthly discharge in cubic feet per second and the total monthly flow in ACRE FEET, for each month of the irrigation season.



	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
MEAN	379	988	1590	274	302	107
ACRE-FEET	8251	58687	98070	16276	17988	6356

DIAGRAM showing the discharge of Black's Fork at Granger, Wyo., in 1896, with table giving the mean monthly discharge in cubic feet per second, and the total monthly flow in ACRE FEET for each month of the irrigation season.

TABLE GIVING THE MONTHLY PRECIPITATION FOR 1895 AND 1896, AT SEVEN OF THE SIGNAL STATIONS IN WYOMING, AND THE AVERAGE FOR ALL WYOMING STATIONS; COMPILED FROM RECORDS U. S. WEATHER BUREAU.

1895

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Cheyenne	.29	.30	1.26	1.20	2.73	2.59	2.54	1.69	.39	.95	.63	.18	15.75
Lander	.68	.21	1.17	5.71	1.32	1.90	.19	1.04	1.74	1.00	2.30	.00	17.26
Laramie	.08	.14	.43	.87	2.09	2.12	2.71	1.17	.18	.74	.32	.33	11.18
Sheridan	1.60	.90	.97	2.29	1.88	3.19	.57	1.44	1.40	.57	1.07	.25	16.13
Sundance	1.20	2.10	2.50	2.48	3.47	5.25	.45	1.35	.75	.47	2.72	2.10	24.84
Wise	1.45	.25	.80	1.57	1.57	.00	1.36	1.74	.54	.57	1.25	.07	10.17
Wheatland	.00	.00	.00	.00	4.30	3.20	1.46	.00	.60	2.00	.80	.70	13.06
Average for all stations in State	.95	.57	1.97	2.30	2.55	3.09	1.17	.91	.88	.70	1.30	.45	16.84

1896

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Cheyenne	.68	.31	2.06	2.08	2.85	1.41	6.25	2.52	2.08	.28	.14	.03	20.79
Lander	.24	.26	2.63	1.20	1.75	.12	3.00	.49	1.08	.74	.81	.00	12.32
Laramie	.44	.17	.59	3.53	2.37	2.72	1.66	.89	1.16	.18	.09	.00	13.80
Sheridan	1.05	.25	1.65	1.05	.81	.74	1.09	.00	2.33	.62	1.85	.15	11.59
Sundance	.70	1.90	4.50	2.71	1.94	3.45	2.38	.53	3.35	.66	1.20	.40	23.72
Wise	.40	.35	.75	1.76	1.81	.63	1.45	.90	.92	.00	.77	.00	9.74
Wheatland	1.70	.65	1.40	.55	2.73	.00	.58	2.19	.40	.12	.85	.00	11.12
Average for all stations in State	.79	.63	1.94	1.63	2.10	1.67	2.04	.90	1.64	.50	1.06	.10	15.00

THE PUBLIC LAND SURVEYS.

THE NEGLECT TO PROPERLY MONUMENT THEM AND THE EVILS RESULTING THEREFROM. NECESSITY FOR LEGISLATION ON THIS QUESTION.

Nearly one-half the expense of the ditch surveys, made by the State Engineer's office, is incurred in making connection with the public land surveys. In a majority of cases it takes more time to find a section corner than it does to traverse a ditch. These connections have to be made because the value of the work depends upon showing correctly the location of ditches with reference to the government surveys and the legal subdivisions of land irrigated or susceptible of irrigation; but where, as was the case this season on part of the irrigation surveys on No Wood River, one public land survey laps over another and there are two townships with two sets of section corners on the same land, while the land office plats show these townships and corners as marking different land, we have had to wrestle with a geographical problem for which there is no adequate solution.

The land office plats show the sections along the Stinking Water River to be uniform symmetrical squares, and the official government maps present the geography of this country in conformity therewith. Recent ditch and railroad surveys show that this is scarcely true of a single section, but that instead of being squares they take a surprising variety of geometric forms. The north line of Section 23, Township 53, Range 101, instead of being one mile long, is 8,900 feet in length, while the south line of the same section is 9,600 feet long. The south line of Section 13, of the same township and range is less than 4,00 feet long, and illustrations of similar inaccurate dimensions could be multiplied indefinitely.

The complications and possibilities of mischief growing out of this crude and fraudulent work are beyond adequate statement. Section 23 is shown on the government maps as containing 640 acres; in reality, it has nearly twice that area. Section 13 instead of being a full section, has less than four-fifths of its represented surface. The allotments of water are based on the acreage irrigated. If we follow the government maps, these errors are perpetuated; if we conform to the facts, there is danger of controversies arising.

The sorest trials of our official surveys come, however, from the entire absence of monuments to mark government surveys, or the existence of those which indicate nothing. In the cases of the imaginary surveys which were in vogue during the existence of the special deposit system, field notes, topography and everything connected with the purported surveys were fraudulent. In such cases each settler on these lands has been a law to himself. He has employed local surveyors to establish his corners, and as these are based on different data and made by different men, they do not agree with each other, and there is no way to harmonize them. Hence, all the ingenuity of this office has to be exercised to adjust these surveys, in order to prepare our maps at all, and they will inevitably result in boundary litigation which will fatten our courts and impoverish our farmers.

The greater part of the State, however, has been surveyed in entire conformity with the regulations of the Gen, eral Land Office, and our troubles are not attributed to the manner in which the work was performed, but to the imperfect laws and regulations governing its performance. These provide that where stones cannot be had to mark corners, they shall be witnessed by pits and mounds. Such a provision might have some reason for its existence on the grass-covered plains of Iowa and Nebraska, but on the wind swept, sandy stretches of this State they are ridiculous, or would be if the consequences were not so serious. In this dry climate a mound will not compact in a year's time, and a single Wyoming zephyr will both level the mounds and fill the pits, no matter how closely they conform to the regulations. In all our surveys we have never found a mound or pit in satisfactory shape where the surveys had been made for two years.

Last year we had to retrace a large number of lines on government surveys made from fifteen to twenty-five years ago. All of these had been honestly made and the corners marked in accordance with the regulations of the Surveyor General. What was the result? More than half of the sandstone monuments had disintegrated, and where we were able to find anything at all, it was simply a pile of sand. Many of the cottonwood stakes had rotted off and had either been used to replenish a camp fire or were in such a position that the original location of the corner was wholly a matter of conjecture.

Seven years of this sort of experience has given a correct appreciation of the value of monuments and the necessity of their being both conspicuous and enduring. In fifty years nine-tenths of the government corners in this State will have disappeared, and with their removal will go the greater part of the value of the survey, especially in the uninhabited portions of the State.

The importance of making a proper record of public surveys on the ground in a way that there shall be no danger of unwarranted change or controversy over the location of the points established, is so apparent that it was with great surprise that I learned that it was the practice of the topographic parties in the Geological Survey to leave no monuments whatever to witness their work in the field. As soon as these surveys began in this State, I urged upon the Director the importance of a change and the establishment of at least a limited number of monuments, but was unable to secure his favorable consideration of the proposed reform. Subsequently, when there was a change in the head of this survey, Senator Warren and Congressman Mondell began a systematic and vigorous movement to secure legislation which would require the monumenting of these surveys, and were able to secure from Director Walcott the consideration which his predecessor refused. In reply to a communication from the Director asking me to submit recommendations as to what was needed, I submitted the following statement:

CHEYENNE, WYO., Dec. 2, 1895.

HON. CHARLES D. WALCOTT,
Director U. S. Geological Survey,
Washington, D. C.

DEAR SIR:

In accordance with our understanding had when I was in Washington, in June last, I submit herewith a statement in support of the establishment of monuments to mark on the ground the results of the topographic surveys of the U. S. Geological Survey, together with a design for such monuments and recommendation as to their location.

NECESSITY FOR MONUMENTS.

1. The utility and practical value of any survey is largely dependent upon the measures taken to preserve its results and to enable them to be identified and put to practical use.

2. For this purpose monuments are indispensable. Without the land marks to indicate the location of section or township corners, the utility of the public land surveys would be sacrificed, as the maps alone would be of little service.

3. They are equally necessary in the topographic work of the Geological Survey. The maps of these surveys being made on a different scale from public land surveys and the sections and townships of the latter not being marked thereon, there is no means of using the monuments of the latter survey to locate the contour lines of the topographic survey. In the absence of definite land marks, the maps themselves will not serve.

4. The practical utility of topographic surveys, in the arid region, in connection with mining, irrigation, water supplies, and to a less extent railway location, depends upon ability to identify their results on the ground. This identification to, be of value, must be absolute. A difference in levels of ten feet will often determine whether an irrigation canal can or cannot be built. Approximate location of contours will not, therefore, suffice.

5. If they could be identified, these contours are not located with the accuracy or detail required in mining, water supply or irrigation development. For these purposes what is required is the absolute elevation and position of a limited number of points. These will enable parties interested to determine whether detailed surveys are necessary; will

form the base for such surveys and greatly lessen their cost.

LOCATION OF MONUMENTS.

6. Monuments ought not to be so numerous as to unduly increase the cost of these surveys, but, on the other hand, they should be sufficiently close to each other to form a convenient base for detailed additional surveys.

7. They should be connected with the public land surveys. All irrigation, mining or other industrial enterprises, which will be aided by topographical surveys, must be connected with and be governed by such surveys. These surveys also give a convenient and generally understood means of determining the location of any point, while the section and township corners of the land surveys aid in turn in finding topographic monuments on the ground.

8. The addition of permanent topographic monuments connected with the public land surveys will assist in preserving and identifying the latter. This is especially true in the arid states, where lack of population, and the fact that much of the area will never be the seat of settled habitations or industries, will prevent private development perpetuating the land marks which now mark the public land surveys.

Many of these are made of material subject to rapid decay, others are so insecurely established that within the next fifty years all those outside irrigated lands or the limits of mining districts will disappear. The establishment of a few conspicuous, durable monuments by the topographic survey will be of inestimable value as a base for resurveys of the public land, should these ever become necessary.

CHARACTER OF MONUMENT.

9. It ought to be indestructible, not easily disturbed and sufficiently conspicuous to be easily found.

10. Only two materials meet these requirements, iron and cut stone.

11. Of these, iron is recommended. It is more conspicuous than stone; in most instances cheaper and far more durable than the sand stones of this region.

RECOMMENDATION.

12. I therefore submit as a design for such monument a hollow cast iron post 4 or 4½ feet high, with sides 6 inches across; 2 feet to be above ground, the remainder below. The form is sufficiently indicated on the accompanying drawing.

13. These monuments to be placed at each township corner. The elevation of the top above sea level to be ascertained and marked thereon by cast figures sliding in a groove and held in place by a screw. The position and elevation of these to be marked on the topographic maps.

In submitting the above recommendations I have endeavored to present this matter in as concrete a form as possible. The details as to size, shape and character of monuments are of course immaterial. The necessity for these is, however, in my opinion, indispensable both to making this work of practical value and to securing popular support to its continuance in this section.

I have submitted these recommendations to the State Engineers of Idaho and Colorado, to Hon. E. S. Nettleton, ex-State Engineer of Colorado, to Hon. E. Gillette, Mem. Am. Soc. C. E., and Superintendent of Water Division No. 2, this State. They all cordially approve them and agree with the statement as to the necessity for the proposed change in the methods of the survey.

Thanking you for your interest in this matter, and believing that your approval of this change is destined to mark a new era in the usefulness, the popular appreciation of the importance of the topographic survey and in the extension of its work, I am

Sincerely yours,

ELWOOD MEAD,
State Engineer.

All of these recommendations, except the twelfth, were approved and a law passed providing for iron monuments at or near each township corner. Considerable of this work has been done in this State. The convenience and value of the change is already manifest, but the reform ought not to stop here. There should be immediate provision for marking every corner of our public land surveys, made hereafter, by the same kind of posts. The expense would be a trifle and the change from the present disgraceful and inadequate methods of incalculable value.

THE BIG HORN HOT SPRINGS.

So much has been said and written about the hot springs along the Big Horn River that it was arranged for Assistant Engineer Gilcrest to visit them in October of this year. The purpose of his visit was to measure the flow of the springs; to make inquiries as to the number of persons visiting them and the success which has attended the use of their waters. From his report the following facts are obtained:

These springs are on the east side of the Big Horn River, five and one-half miles south of Owl Creek, in the northeast corner of the Indian reservation, and less than two miles from its border. The country surrounding is a broken foothill region, the northern edge of the canon of the river, where it cuts through the Owl Creek range of mountains, being only about six miles south.

The springs rise at the base of a sugar-loaf hill about 200 feet high and are about 500 feet from the bank of the Big Horn River. The pool of the principal spring is about twenty feet in diameter and the waters which flow from it have spread out over the bottom between where it rises and the river, and have built up a calcareous formation similar in appearance to that found at the Mammoth Hot Springs in the Yellowstone National Park. It covers about five acres and is many feet in thickness. For some distance away from the spring the formation is quite smooth, with an even slope toward the river bank. After this the drop to the river is by a series of terraced pools or basins, as shown in the accompanying cut, made from a photograph taken at the time of this visit.

Before these springs were taken possession of, by health- and curiosity-seekers, this formation was extremely

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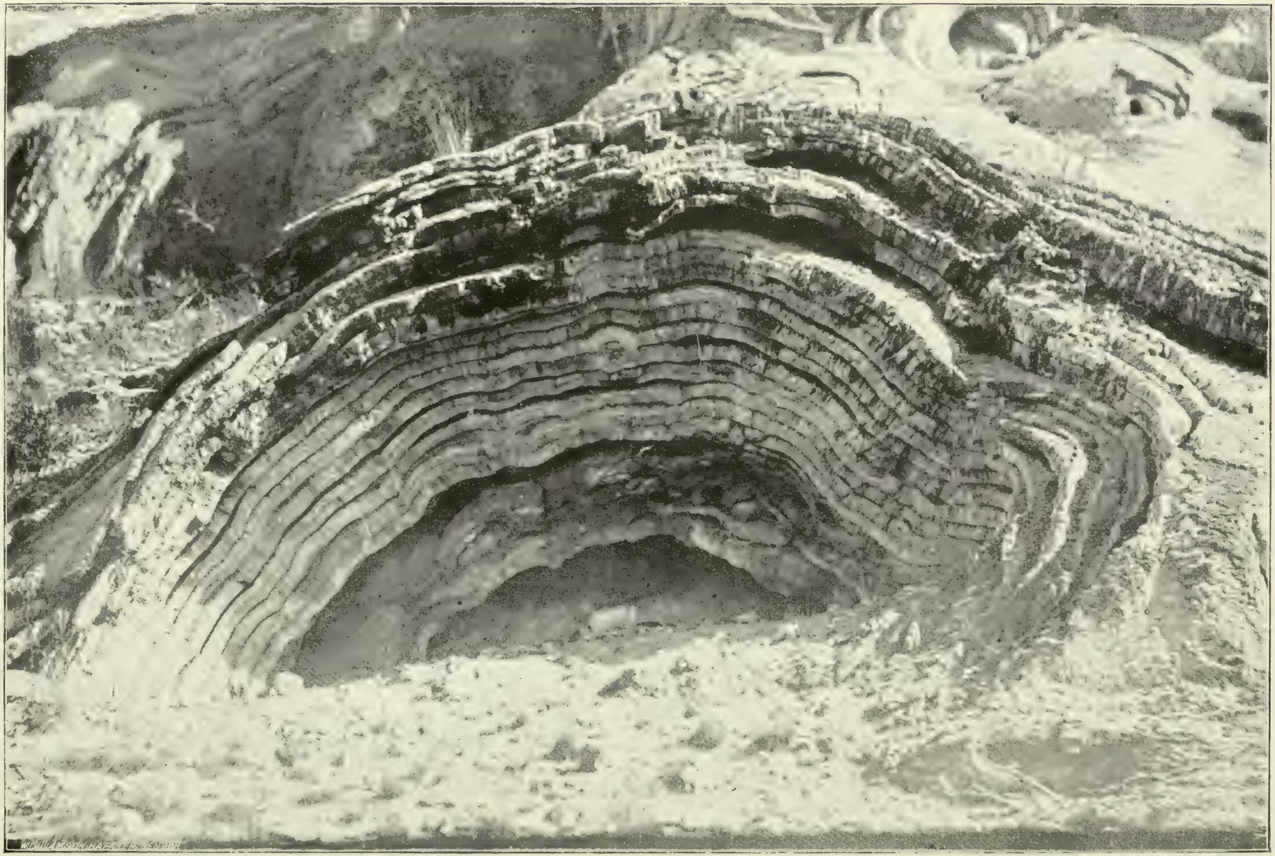

SECTION OF THE FORMATION, BIG HORN HOT SPRINGS.

beautiful, but as a result of the interference with the natural flow of the water and the depredations of specimen collectors, who have carried away large quantities of the most striking and peculiar of these formations, many of the pools are now dry and the surrounding walls are disintegrating into a crumbling, unsightly mass.

The facilities for bathing are extremely primitive and are wholly inadequate to meet the requirements of either healthfulness, privacy or good order. There is but one permanent bath-house to accommodate the invalids visiting these springs, the number of whom last summer was estimated at 400. The character of this house and the conditions of its management make it doubtful as to whether the sanitary condition of the place would not be improved by its destruction. It is a low, one-story building, fifteen by eighteen feet in ground space, built of loose stone roofed over with poles and earth. It is built on the formation and arrangements for bathing have been secured by excavating a basin in the floor. A small open ditch conducts hot water from the spring to this pool, and an open cut, closed by a sliding board which reaches to the bottom, empties it when desired. During last season a continuous stream of invalids, afflicted with all sorts of disorders, followed one another into this pool from before daylight until late at night. No sanitary precautions were observed; persons afflicted with all kinds of diseases had unrestricted and promiscuous access.

This house being wholly insufficient to accommodate the crowds, other bathing pools have been constructed by excavating holes in the formation, these being located wherever individual fancy might dictate. The bathers are protected by temporary screens of canvas, blankets or brush, which are both unsightly and insufficient for the purposes of privacy, and are rapidly and permanently destroying the beauty of the surroundings.

As these springs, although on the Indian Reservation, are far removed from the headquarters of the reservation authorities, but little attention is paid by them to the conduct of affairs. Being on a national reservation, the civil authorities of the State can exercise no police supervision. It is therefore, a sort of "no man's land." No permanent improvements can be made and no adequate supervision provided for the housing, care or control of the large number of people who are being annually attracted to these springs for health or pleasure. All have to live in tents or wagons, or, where these will not suffice or cannot be had, the unsightly dugout is made to answer.

The nearest town is Thermopolis. It is about five and one-half miles distant. There are no adequate accommodations at this town for invalids, and the lack of police supervision over the springs has attracted to them a great many undesirable characters who are a source of annoyance to the residents of that vicinity and a discredit to the State. It is to be hoped that so important and valuable a natural sanitarium may be placed under such control as will permit of its proper management and enable needed improvements to be inaugurated.

The discharge of the springs was 13.15 cubic feet per second or 18,500,000 gallons per day. No thermometer could be obtained to measure the temperature, but it was so warm as to render holding the meter uncomfortable before the gauging was completed.

Through the kindness of Dr. J. A. Schuelke, of Lander, who has given considerable attention to these springs, we are enabled to present an analysis of their waters and description of their character and value.

Dr. J. A. Schuelke, of Lander, Wyoming, has done more than any other single individual to call attention to the curative virtues of these springs. He has spent a portion of several seasons there, and has made a careful study of both the chemical and physiological properties of these waters. At my solicitation, he prepared the following statement.

DOCTOR SCHUELKE'S STATEMENT.

The Big Horn Hot Springs have attractive surroundings being situated in a mountainous and extremely picturesque region. The springs, of which there are a great number within a radius of half a mile, are at an altitude of about 4,500 feet above sea level. Some of these well up from the bed of the Big Horn River, but the largest one is about 300 yards distant. The waters from this one fall over a precipice 40 feet high, reaching the river by a beautiful cascade. A fair idea of its volume can be formed by stating that it requires a rapidly running ditch six feet wide and three feet deep to carry the flow from this spring. Wherever it overflows the adjacent ground, it deposits its salts, notably those of lime and silica, causing the formation to look as white as snow.

The country around is undoubtedly volcanic. Extinct craters, some of which are filled with water, are seen in the immediate neighborhood of the springs. These waters are rich with different salts. The solids are estimated by Professor M. P. Schuetzenberger to be ten times greater in quantity per litre than the waters of Mont Rouge, the ordinary drinking water of Paris, France. It will be noticed by the analysis, which was kindly made for me by Schuetzenberger, a Professor in the College of France, that the water abounds in sulphur, both in free sulphuretted hydrogen gas and in combination with lime and magnesium; that it possesses a liberal amount of the alkaline salts of sulphate of magnesium and alkaline chlorides of sodium and potassium, and that it has in addition a great amount of the calcareous earths such as carbonate of lime and silica. In addition, it has some ferrous oxide and there is also present, when it bubbles up from the gorge, a considerable amount of carbonic gas which, however, escapes readily. The temperature of the water is 135 degrees Fahrenheit.

From their chemical composition we would say, then, that these springs are alkaline-sulphur springs in combination with salines and calcareous salts. They closely resemble in their different properties the famous European springs of Carlsbad, Marienbad, Ems, Teplitz and Aix-la-Chapelle.

I sum up their properties as stimulating, absorptive, alterative and reconstructive, and clinical results have proven to my entire satisfaction the claims made for them by their chemical analysis. After all, results are the only criterion by which we can judge the value and efficacy of any given remedy.

It is difficult to say what diseases are not benefitted by a course at these thermal waters. Among the list of those maladies which I have relieved at the springs may be mentioned all the acute, subacute and chronic diseases of all mucous membranes, such as catarrh of the nasal passages, the mouth and pharynx, the throat, bronchial tubes, the stomach and the whole alimentary canal. Dyspepsia due to hyper-acidity of the stomach and gastric ulcers; congestion of the liver due to catarrh of the bile ducts and a sluggish portal circulation, and beginning cirrhosis, acute and chronic catarrh of the whole genito-urinary tract. The water acts not only by its chemical ingredients in these instances, but also mechanically as a sluice upon the system. It has, therefore, been my custom to order the patients to drink it liberally. The water has an undoubted beneficial influence upon gravel, lithiasis and the uric acid diathesis.

By its thermal properties this water has an antiphlogistic effect upon all the pelvic organs. It allays congestion and modifies inflammation. It decidedly increases tissue metamorphosis and in this way helps to eliminate poisons and impurities from the system. This explains its rapid action as an absorptive and alterative. It certainly acts soothingly upon the brain, the great nerve centers and upon the general nervous system, allaying nervous irritability and neuralgias and relieves those forms of paralysis due to peripheral changes. In a great many instances probably by absorbing exudations upon the nerve sheaths.

Its alterative properties are most notably shown in cases of rheumatism, some forms of gout and specific venereal diseases. Rheumatism, more especially the acute and chronic articular variety, is speedily relieved. The muscular form also yields readily. I have seen rapid absorption of cartilaginous and bony substances following a course at the springs in that most dreaded of all rheumatoid afflictions, the arthritis deformans.

In the treatment of all the disorders which have rendered the hot springs of Arkansas and the springs of Aix-la-Chapelle, France, famous, the Big Horn Hot Springs are fully equal, if not superior, and all that is needed to secure them equal reputation is adequate transportation facilities and proper provision for the care and comfort of patients who visit them.

The great amount of carbonate of lime and other earthy salts make the Big Horn thermal waters the remedy par excellence for rachitic and osteomalacious patients by acting as a reconstructive agent and an upbuilder of tissues and bone formation.

The slight amount of oxide of iron has, in conjunction with the other elements, a beneficial influence on anæmia and chlorosis. Hobart A. Hare, an eminent investigator of Philadelphia, has conclusively shown that only the slightest amount of iron is absorbed and utilized in the human economy, and this amount the patient gets in the Big Horn water as they all have been advised by me to drink it copiously.

It was upon my recommendation that the people of Wyoming and the adjoining states first tried these springs as a remedial agent and I am happy to say that the results have been most excellent and satisfactory. During my two months stay at these thermal waters in the summer of 1896, at least five hundred people were bathing in and drinking the water. Ninety per cent. of these went away either cured or greatly benefitted, and that too under trying circumstances, without any conveniences and under hardships of camp life. That change of scene, fresh mountain air and rest acted as adjuvants to a great many, I have no doubt.

In conclusion, I wish to make the prediction that with railroad facilities for reaching these springs, and improvements which will provide the comforts and conveniences of modern civilization for those who visit them, the reputation of these springs will spread from ocean to ocean and will rival some of the great European Spas: they will prove a boon to the people who frequent them, and incidentally, to the people of the State of Wyoming.

COLLEGE DE FRANCE.
LABARATOIRE DE CHINNE MINERALE.

Analysis of the great Thermopolis Hot Springs by Prof. Schuetzenberger of the college of France, member of the Institute and Academy, at the instance of his friend Dr. J. A. Schuelke, of Wyoming.

Sulphuretted Hydrogen ($S\ H_2$)	0.0268
Sulphate of Lime, ($S\ O_3\ Ca\ O$)	0.6367
Sulphate of Magnesium ($S\ O_3\ MgO$)	0.3285
Alkaline Chlorides of Sodium and Potassium	0.5583
Of this latter Chloride of Sodium prevails about four-fifths and the Chloride of Potassium about one-fifth.	
Carbonate of Lime ($C\ O_2\ CaO$)	0.5250
Oxide of Iron, Silicon, Organic Matter and loss	0.1010
	2.1495
Fixed Residue	2.1495

This is per litre.

A litre is a quart minus 10 centimeters.

Respectfully,
Dr. J. SCHUELKE.

STATE LAND SELECTIONS.

In nothing has there been a greater change than in the views held by farmers in this State respecting the selection and leasing of grazing lands. When it first devolved upon the Board of Control to select the lands granted to the State in the Act of Admission, the only parties who favored the selection or leasing of any lands, were the range cattlemen. Ranchmen were either indifferent or opposed to such selections and so far as could be determined, from any expressions which reached the Board, the range sheepmen took no interest whatever in the matter. Range cattlemen were the only parties who would agree to lease State land, and they only in large tracts, as it was only in this way that they could make it profitable. Some of these selections were made and have resulted in returning to the State a considerable revenue, but in a number of instances they interfered with, or curtailed, the free pasturage of settlers on contiguous lands and were subjected to criticism on this ground. The results which followed the attempts to select irrigable land were described in the State Engineer's Report for 1894, pages 161 to 170. They convinced the Board that any further attempts in this direction were not only a waste of time and energy of its members, but that it tended to render the whole subject of State control of public lands unpopular, so that at the first meeting of the Board in 1895, it was decided to do nothing further with selectings of this character.

As a result of these various influences, practically, no land was selected by the Board from 1893 until 1896.

At the meeting of the Board of Control in October, 1895, the Division Superintendents reported a marked change in sentiment on the part of small ranchmen, and that many were desirous of securing control of small areas of grazing land. This was due to the impairment of the pasturage on the open range; the conflicts between sheepmen and settlers and the action of the U. S. Government in compelling the removal of fences illegally enclosing public lands. It was believed by the Board that this condition of affairs generally prevailed and that it afforded an opportunity for the State to select its lands in such a way as to secure a large revenue from their rental without injuring any one, but on the contrary greatly promoting the prosperity of many of its most useful citizens. To ascertain the real sentiment and to enable the wishes of the farmers of this State to become known, the following circular was prepared for gratuitous distribution and a notice of the Board's contemplated action published in one newspaper in each county in the State:

Under the law which constitutes the State Board of Control a "Special Commission to select and locate all lands which are now or may be hereafter granted to the State of Wyoming by the United States," there has been selected about 240,000 acres. There yet remains to be selected about 375,000 acres of the grant which accompanied the Act of Admission, and a large but unknown acreage of indemnity land.

The land already selected returns to the State an annual revenue of over $4,000. If all the lands were selected this would be largely increased. It is the desire of this Special Commission to proceed with this work as rapidly as it can be economically done. To this end the co-operation of the public, and especially of those interested in the various institutions to be benefitted, is asked. We have been aided by the authorities of the Soldiers' and Sailors' Home; we can be greatly assisted by the authorities of other institutions.

What we desire is knowledge of the location of land valuable for pasturage, or because of possibility of irrigation. Land which can be sold for the minimum price of $10 per acre, or land which can be rented, and thus made productive of revenue.

Parties desiring to lease or purchase lands, in case they are selected, are requested to advise us of this fact. This can be done by filling out the blank below and signing the same, the signature to be attested by one witness.

Communications relative to these matters may be addressed to any member of the Special Commission. Either to the President, Elwood Mead, Cheyenne, Wyoming, or to the

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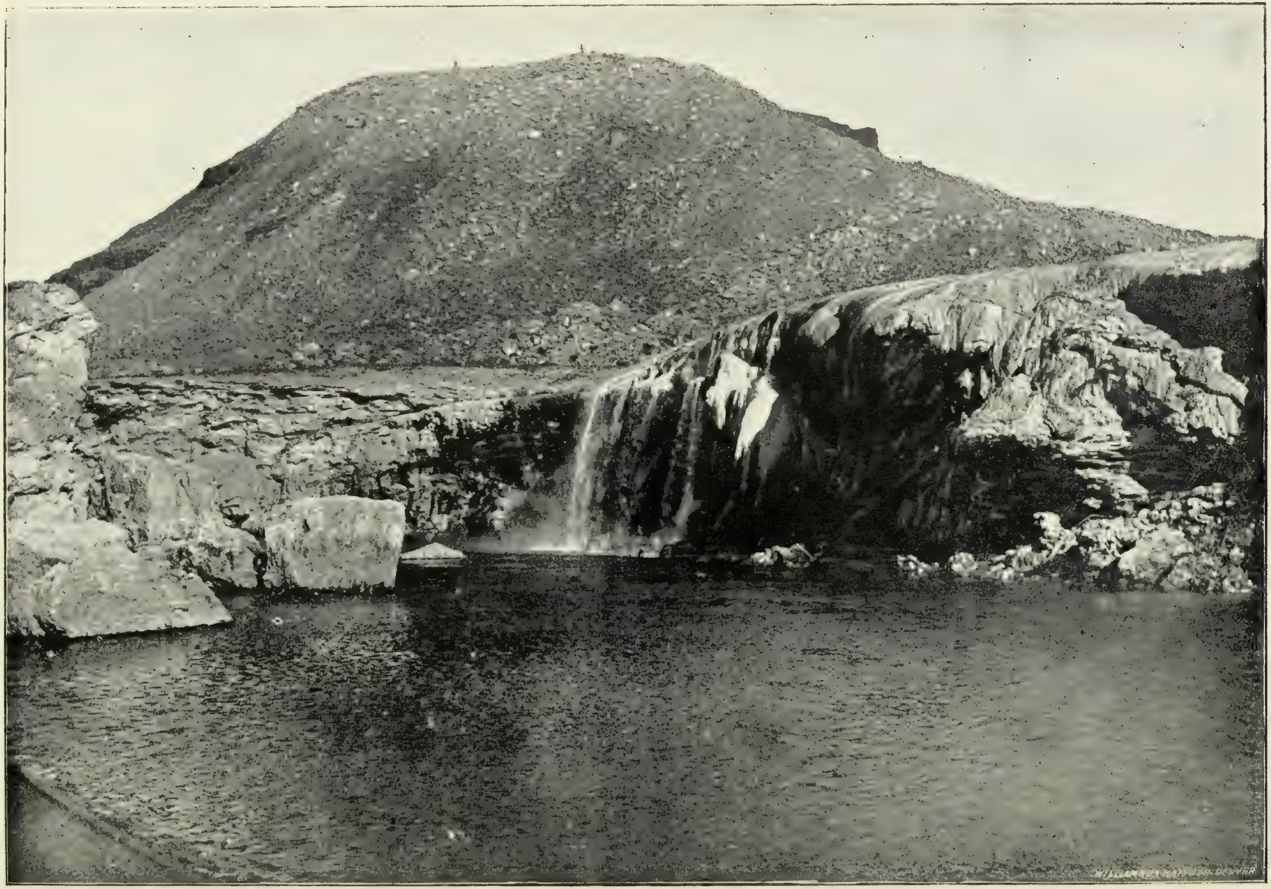
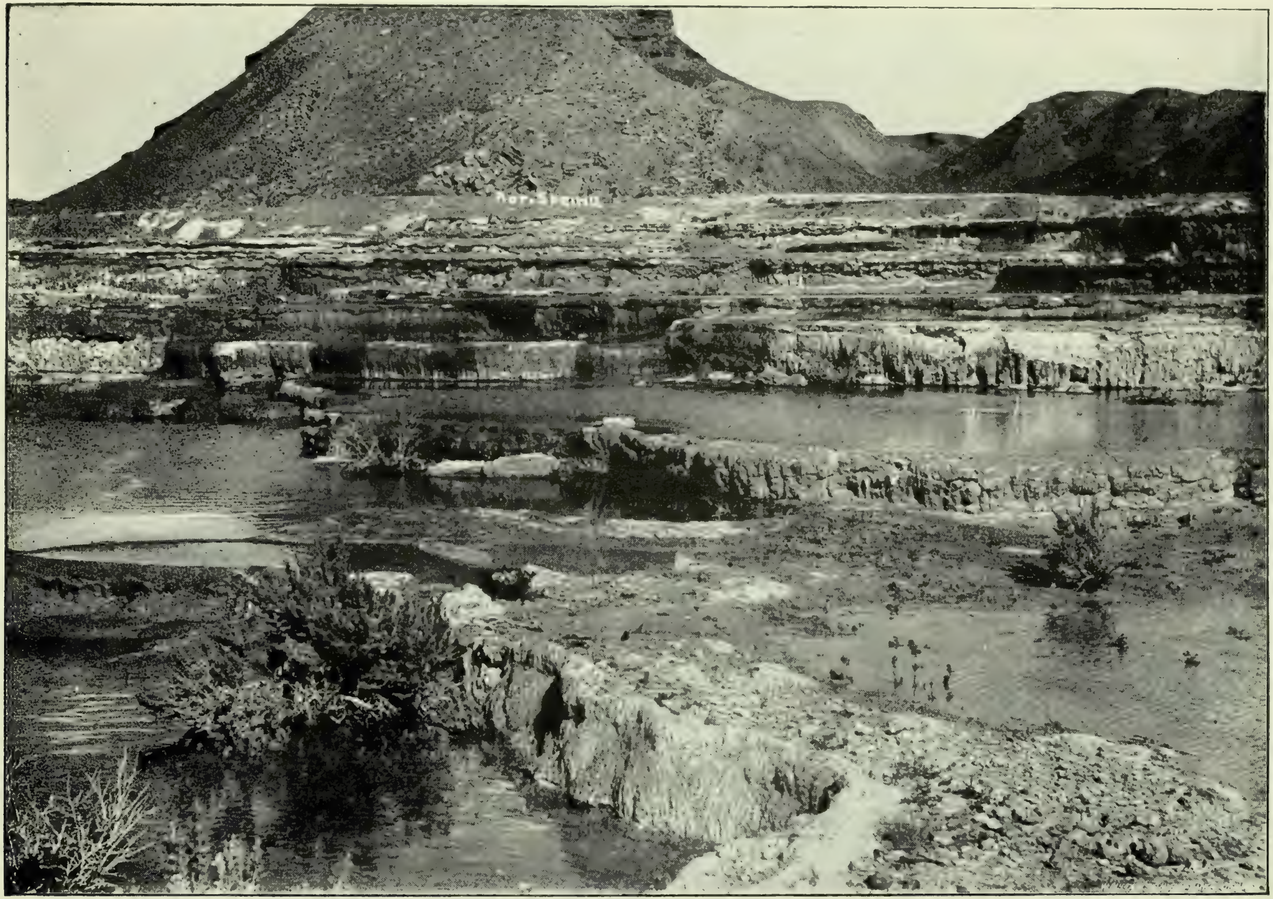
OF THE
UNIVERSITY OF ILLINOIS



WATERFALL, BIG HORN HOT SPRINGS.



TERRACES AT THE BIG HORN HOT SPRINGS.

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Secretary, J. A. Johnston, Cheyenne, Wyoming, or to Edward Gillette, Sheridan, Wyoming, or N. H. Brown, Lander, Wyoming, or Charles H. Priest, Evanston, Wyoming.

............, Wyo.,........189..

I, ..., recommend the selection of the land described below, as being valuable agricultural land because it can be..........................

[Signed]...................

NOTE.—State whether the land recommended can be rented for grazing or can be irrigated.

DESCRIPTION OF LAND RECOMMENDED.

Section	Township	Range	Acres	Remarks

............, Wyo.,............, 189..

I desire to lease the above described land, and agree in event of its selection to enter into a contract with the State for its rental at the yearly rate of....cents per acre.

[Signed]................

Signature of Witness:

....

............, Wyo.,............, 189..

I desire to purchase the above described land, and agree in event of its selection to enter into a contract with the State for its purchase at a sum not less than $10 per acre.

[Signed]................

Signatures of Witnesses:

....

....

Parties desiring to lease or purchase lands in the event of their selection may fill out one of the above blanks, which signifies their desire. In event they do not wish to lease or purchase, the said blanks are to be left undisturbed.

Respectfully,
ELWOOD MEAD,
J. A. JOHNSTON,
EDWARD GILLETTE,
N. H. BROWN,
CHARLES H. PRIEST,
Members of the State Land Commission.

When the Board assembled at its regular meeting in March, 1896, there had been received, at the State Engineer's office, recommendations for the selection of about 400,000 acres of grazing land, which the parties recommending desired to lease, and for which they had agreed in writing to pay an annual rental, varying from one and one-half to ten cents per acre. More than half of those recommending selections fixed the annual rental at five cents an acre, and agreed to pay this if the lands were leased to them. Some of the land recommended was susceptible of irrigation, but none was recommended as being more valuable on this account, and all those desiring to lease wished the land for grazing purposes. *Not a single proposal to purchase land in event of its selection was received*, the minimum price of $10 per acre seeming to be prohibitive.

After a careful examination of all the recommendations and much anxious deliberation as to the proper course to be pursued, the Board decided to select only such land as would lease for five cents or more per acre, to favor small selections and those contiguous to irrigated lands. The latter action was deemed to be in the public interest because it promised a permanent lease and because of the large number of ranchmen who had written that they must either control some pasture land or abandon their homes. One conspicuous instance of this occurred on Clear Creek, in Johnson County. The farmers along this stream, who had for several years inclosed and used a large area of public land, were notified by the U. S. authorities to remove these fences, and had either to induce the State to select these lands or change their methods of farming. With many this meant to abandon their farms. At the meeting of the Board one of the farmers, Mr. Cramer, and an attorney, Hon. C. H. Burritt, appeared before it as the representatives of the settlers, and made such a showing as convinced the members that the selection of this grazing land was necessary to preserve the security of these homes and the profits of these farmers; that it would enhance the value of the irrigated land, and bring indirect advantages to the State fully as great as the rentals which would be received from the selected lands.

Many other similar representations were made to the Board at this meeting. It was shown that the union of grazing and irrigated land is needed in the breeding of improved varieties of stock; in carrying on dairying; in economical winter feeding; that it is both a convenience and a source of enhanced profits, and that, without such union, the best results from neither kind of land can be had.

All of the lands recommended for selection by the Board of Control were approved by the State Land Board, and nearly all have been leased and are productive of a large annual revenue to the State.

No further action was taken by the Board of Control to secure additional requests for selections, as not more than one-half of those submitted could be acted upon without further examination. Many were referred to the different Division Superintendents for this purpose, and it was believed that these examinations, and the final disposition of the recommendations already before the Board, would absorb the entire appropriation made for this purpose.

Notwithstanding that no effort was made to stimulate requests for the selection of land they continued to be received, and when the Board met in October, 1896, requests for the selection of about 500,000 acres additional were on file. The various members of the Board have subsequently given much time to the consideration and examination of the lands recommended, and will be prepared to make a large additional selection in March.

Some of the lands, which had been referred at the March meeting, and which had in the meantime been examined and approved, were selected at the October meeting, so that there now remains to be selected less than 250,000 acres of the State grant. The recommendations on file aggregate many times this area and are continually being augmented by subsequent applications. The members of the Board of Control, realizing that it will be impossible for all these recommendations to be considered, much less approved, have discouraged further requests, explaining to applicants, wherever possible, that the only possible chance for all their requests to receive favorable consideration will be through securing an additional grant of land from the general government.

All of the requests or recommendations examined by the Board at its October meeting, or received subsequent to that time, fix five cents an acre as the rental price which parties are willing to pay.

There are now on file, in the Engineer's office, requests for the selection of about 1,000,000 acres of land in excess of the State grant. This could be leased at once for five cents an acre if the general government would give control of the land to the State. It would mean an annual income to the State of $50,000 a year, and, if the letters on file in connection with these requests are even approximately true, it would injure no one but would greatly enhance the prosperity of the people who leased the land.

In considering these recommendations, the most serious difficulty which the Board has encountered has been to avoid selecting land which would interfere with the use of public pasturage by others. This has been successfully accomplished in nearly all cases where the lands are attached to contiguous areas of irrigated land. There are a number of protests on file, however, against selections recommended by range stockmen. It is claimed in these protests that many of these selections have been located to include water-holes and the margins of streams, so that parties by leasing comparatively small areas of land would be enabled to control large tracts of the vacant public domain. In these cases the pasturage leased would represent but a small fraction of the value controlled. The opportunities for abuses in such selections are so great that they are looked upon with little favor.

The small appropriation, made for the expenses of the Board in examining these lands, does not permit of a proper determination of the facts in these cases. To do this there ought to be four or five times as much money appropriated as has been. The Board has been compelled, therefore, to reject all selections where any question was raised, and to confine itself to the consideration of those to which, so far as it was advised, there was no objection whatever. It is not claimed that this is the wisest course to be pursued, as many of these protests may not be well founded, and an examination would doubtless show that in many cases the recommendations were altogether meritorious and the lands such as the State ought to own, but so long as the means furnished the Board will not permit of examination they have no alternative but to act as they have done.

It is probable that the March meeting of the Board will practically complete the selection of all the lands granted to the State. This being the case the Board feels constrained to assist as many of the State's citizens as possible, so that the same course which was followed at the meeting one year ago will be pursued at the ensuing meeting. The requests for small selections will be first considered, and wherever found meritorious will be approved. If there are enough selections of less than 1,000 acres each to absorb the remainder of the grant, no larger selections will be considered. If there should still remain a portion of the grant undisposed of, then the effort will be to select the land which will be the most desirable property for the State.

REPORTS OF SUPERINTENDENTS
—OF—
WATER DIVISIONS.

REPORT OF J. A. JOHNSTON, DIVISION No. 1.

CHEYENNE, WYO., Nov. 16, 1896.

MR. ELWOOD MEAD,
State Engineer,
Cheyenne, Wyo.

DEAR SIR:

In compliance with your request, I have to submit the following, relative to the work of the Superintendent of Water Division No. 1:

The new adjudications commenced in 1895 in this division were those of Horse and Sand Creeks, in Natrona county. Testimony in the former was, after lawful notice, taken at Johnstown, in the above named county, on the 21st and 22nd days of September, and submitted for public inspection on the 25th day of the same month, due notice of said inspection having been given at the time of taking testimony. The inspection resulted in notices of contests being filed by A. J. Bothwell and Robert Taylor, appropriators from the stream. The contest was heard before Elwood Mead, acting as Deputy Superintendent, at Casper, in December of the same year. All of the evidence taken at that time, together with the original testimony, was submitted to the Board of Control at its meeting in March, 1896, and a decree rendered in conformity with the said testimony and due notice given thereof to the several appropriators on the stream. On May

18, 1896, notice of an appeal from the findings of the Board of Control to the District Court, in and for Natrona County, in the Horse Creek matter was received and filed in the office of the Board. Said proceedings are pending at this time.

In the Sand Creek adjudication testimony, after lawful notice, was taken at Ferris Post-office, on the 23rd day of September, 1895, and submitted for inspection on the 24th day of September, all parties in interest being duly notified thereof and being fully advised of the importance of the proceedings. No notices of contest were filed in this adjudication and a decree in conformity with said testimony was made and entered at the meeting of the Board of Control held in March, 1896, from which findings there has as yet been no appeal.

In 1896 Medicine Bow River, together with the streams which constitute its tributaries, was taken up for adjudication, and after lawful notice, testimony was taken at Medicine Bow and Carbon, on the five days commencing October 13th and ending October 17th. The said testimony is voluminous and more comprehensive than any heretofore taken in this Division, in so far as description and location of land is concerned. All this testimony has been tabulated and was submitted for public inspection at Carbon on the 5th and 6th days of November, 1896.

In this Division fourteen (14) certificates have been issued for ditches constructed under permits from the State Engineer. Some of these ditches have been examined and reported on personally. Others situate in the remote portions of the Division, owing to the fact that our appropriations are not adequate for the work, we have been obliged to depend on reports made by the various Water Commissioners, which, while not as satisfactory as a personal inspection would be, I believe are, as a rule, honestly and conscientiously made.

For reasons already assigned, I have not been able to visit personally the various portions of the Division during the irrigation season, consequently the Water Commissioners have been instructed by mail. During 1895 there was not any considerable call for their services and no serious trouble was encountered. During the season of 1896, however, the call has been general, and serious trouble was averted in several Districts only by the prompt and decisive action of the Water Commissioners acting under instructions. These instructions have been invariably to get the greatest service possible from the waters of the several streams, keeping in view the fact that priority of appropriation is the better right. Taking this as a starting point, they are given as the various conditions seem to require. Only one arrest was made during the past two years. As a rule, persons who were inclined to disobey or evade the orders or regulations of the Water Commissioners were found to be amenable to reason when matters were fairly presented to them, and were especially so when the penalty for interference with the Commissioners' work was pointed out.

On account of the light snow fall at the head of the Laramie River during the winter of 1895-96 the water supply during the season of 1896 was much less than during any season since the waters of the river have been used for irrigation purposes. Serious trouble and loss to the consumers of water in Wyoming was only averted by the timely rains in the month of July.

At the request of a number of the appropriators from the river and accompanied by the State Engineer, an examination was made of the diversion from the headwaters of the Laramie River into those of the Cache La Poudre. This diversion is made through a ditch about five miles in length, taking water from the main tributary of the Laramie and discharging into the stream above mentioned. This ditch has a carrying capacity of over 100 cubic feet per second of time, and at the time of our examination was taking from the Laramie about 70 cubic feet per second. The injury to Wyoming appropriators resulting from this diversion is unquestionably very great, as the water is taken away from the drainage of the Laramie River and thrown into a stream that flows in an entirely different direction; the evils resulting from this diversion are manifold, the principal one being that no water from this diversion gets back into the original stream, the whole appropriation being entirely lost to it, thus depriving prior appropriators of the re-use of water which results from appropriations within the drainage of the stream.

Another serious evil is, that the Laramie River being deprived of 100 cubic feet per second, more or less, naturally loses velocity proportionately and in crossing the Laramie Plains, a distance of over sixty miles where the grade of the stream is very light, the consequent loss to the stream by seepage and evaporation is very much increased. As no interstate laws or regulations relative to water division exists, nothing can be done by this Department in connection with this matter. This can only be reached by action being taken by the parties who are injured by this diversion.

The most troublesome matter that we have to contest with in adjudications, are the holders of appropriations made under Territorial law, or before there was any law relative to water rights, refusing to give their testimony at the time designated, although duly notified. Some of these are in such condition now that the courts will have to be resorted to, as these parties claim vested rights and refuse to recognize the authority of the Water Commissioner, claiming that their appropriations of water were made prior to the enactment of any law, and that a subsequent law has no authority over their appropriations. A decision of our Supreme Court on this matter would tend greatly towards simplifying the regulation of the adjudicated waters of the State.

Respectfully,
JAMES A. JOHNSTON,
Supt. Water Division No. 1.

REPORT OF EDWARD GILLETTE, DIVISION No. 2.

1895 and 1896.

SHERIDAN, WYO., Nov. 12, 1896.

ELWOOD MEAD,
State Engineer:

The work in Water Division No. 2 for the past two years has been mainly that of causing the users of water to become accustomed to the adjudications made by the Board of Control in October, 1894, and January and March, 1895, meetings. The list of priorities then prepared included all of our principal streams, and involved the issuance of nearly 400 certificates. For the first time, the Water Commissioners were furnished with complete lists of the priorities on the various streams in their Districts, and water has been apportioned from this data the past two years. The result of this apportionment has been uniformly satisfactory; the contentions of the users of water being almost entirely based upon the fact that those having prior rights were wasting water, and not making a beneficial use of same, or that they were using said water upon land for which they did not have it appropriated. In a large number of cases the latter condition was found to exist, and such user of water was given a later priority, water being apportioned to him when the various crops on lands specified in certificates of other users had been satisfied.

The settlement of the water question in this manner seemed to me of prime importance. There is a vast difference in contemplating the quesfion of use of water on the lands bordering a stream which furnishes an ample supply of water at all seasons, and the stream the waters of which, in dry seasons, are not sufficient to prevent many crops from burning up, and become almost, if not quite, a total loss. In the former case the effort is to use water as freely as possible on the lands and in any quantity, the transfer of water from one piece of land to another are matters of no moment, the only strife is to use in some way all the water possible and to encourage its freest use with the greatest liberty, for the community, and State as well, derive benefit from any beneficial use of water which would otherwise go to waste; but how different the case is where crops are burning up. Here is found intense feeling, theory and pet laws for the government of water are cast aside. The condition is an angry farmer, the half matured crops on his land, which gave promise of an abundant harvest, are rapidly burning up. The duty of the Water Commissioner is to save such crops if possible. If there are sufficient evidences that other appropriators of water with superior priorities are wasting water, the amount of their appropriations have been curtailed to that extent, and the crops of the farmer saved which required the water. If there is no waste of water, the condition is usually found to exist or is quickly pointed out as a rule by the sufferer, that some one having a prior right to water is using the same on land for which he has no appropriation, or that he has loaned his appropriation to some neighbor, or in some other way infringed upon the other's right so as to deprive him of water which his appropriation and rights on the stream entitled him to. A user of water being given simply the right to make a beneficial use of water upon certain land, when that right is satisfied, the rights of the next in priority are considered; no one having the right to transfer his water to other lands or to other users, as the rights granted him do not extend so far. His neighbors in times of scarcity of water are forced to protect their rights and save their crops if possible, and they look with very jealous eyes upon any unwarranted assumption of rights by those holding prior appropriations. It is simply the salvation of later rights, and checks in a measure the vast advantage which the earliest rights on a stream possess. If these rights were carried any further than now allowed by the State, it would jeopardize the value of all improved farms having priority for water, below the first few, on most of our streams, and great abuse of water would be made. It is not surprising, therefore, that in all cases we have had the past two years, there has not been a single protest, from one who has applied his water to other lands than that for which it was appropriated, when his priority in the use of water was changed to later date. In times when water was extremely scarce there has been such an intense feeling among his neighbors against such misapplication of water, that in every case he quietly acquiesced in such priority as his new land was entitled to, knowing that this was the only just solution of the problem, and that no other determination would long be tolerated by his neighbors.

I have dwelt at considerable length on this question, as it has been the one of paramount importance and consideration in this Division for the past two years. It has been somewhat of a revelation to me, and strengthens me in the opinion that our water laws are exceedingly just and effective, and that more than ordinary care and foresight was used in their framing than our citizens ordinarily appreciate. Any reversal of the principle here laid down would result in widespread disaster and serious conflicts, with the result that the principle of the non-transfer of water would ultimately prevail.

That the result of apportionment of water has been so satisfactory during the past two seasons, is exceedingly gratifying when the fact is taken into consideration that never in the history of this section of the country has there been so great a scarcity of water as during the past year. No district in this Division has been free from complaints, and the Water Commissioners in several Districts and their deputies have been employed almost, if not quite, all the time allowed them by law to be so engaged. Great care, tact, judgment, courage and patience are requisite qualifications in a Water Commissioner, and we are to be congratulated in having secured desirable men for such duties. In three cases out of about two hundred complaints, relief was sought directly from the District Court. One case, that of Frank Owens vs. Robt. Mock for a change of priority on Smith Creek, a tributary of Tongue River, is still pending. In view of the fact that most of the priorities established on Smith Creek have been abandoned for the purpose of securing a better and more permanent right for the same lands, from the abundant source of Tongue River, since the above named suit was begun, the importance of the decision, therefore, in said suit has been greatly diminished. During the pendency of this case, the Court issued a restraining order as regards the use of water, which was violated. The offender claimed that he did not divert the water to his land, but simply made a beneficial use of the water which some one unknown to him had diverted; the decision of the Court in imposing a fine upon the offender, was that he would hold him equally guilty as though he had diverted said water himself, the offence really being that he was using water which he knew himself not entitled to, and which he was ordered to refrain from using. A decision of this kind would greatly aid our Water Commissioners, as it is getting to be a frequent occurrence in some Districts that when certain headgates are closed by the Water Commissioner, said headgates are raised by some one unknown to the person who is found using the water, which he knows belongs to others. The mere fact of such use should be sufficient to warrant a conviction when an example is necessary to be made of such an offence. Another case was that of the Peralta and Last Chance ditches vs. the Big Goose and Beaver Creek ditch from Big Goose Creek; this case was not for the purpose of deciding priority, but involved the question as to the use of water according to land irrigated. The decision of the Court was to award a quantity of water for the Big Goose and Beaver Canal based upon the actual acreage in crops under said canal, the priority of the Big Goose and Beaver Canal being unquestioned. Had this case been settled by the Water Commissioners, the award of water given the Big Goose and Beaver Creek Canal would have been based upon the acreage of crops upon which a beneficial use of water was made, on land specified in the certificates of the appropriators of water through this canal, which they might be entitled to. The third case, that of Foster vs. Leitner, related to the use or ownership in a canal, Leitner failing to substantiate his claim to ownership, his appropriation through the ditch was denied, and the total appropriation for the ditch in question was reduced by the amount of Leitner's appropriation.

From the adjudications made two years ago, there have been two applications for re-hearing; both of these have been granted, and one has been heard and a new priority allowed. The question here involved was simply as to whether due diligence had been exercised in the construction of the canal. From the testimony submitted, the Board of Control ordered a change from the priority formerly given, the testimony showing, among other things, that the former Superintendent of this Division had reversed his previous opinion as to such diligence having been exercised, and the persons appearing testifying to the satisfaction of the Board that such due diligence had been exercised. The other case is pending and will come up for re-hearing at the next meeting of the Board. When one considers that not over one per cent. of requests have been made for re-hearings, it is difficult to imagine of a more satisfactory adjudication being attained. There are some complaints of a minor nature, but not sufficient to be worth a re-hearing or trial to adjust. It is safe to assume that, could the whole question of water rights in this Division be gone over again, and new priorities be established, a less satisfactory result would be attained. In many cases where several farms have depended upon the waters of small streams, the quantity of water has been materially increased by means of reservoirs and the securing of water rights from other streams for these lands, thus relieving the duty of water from the small stream.

The adjustment of the waters of certain streams to the lands adjoining so as to distribute same to the greatest economical use has been a part of the work of this office. Ditches have been constructed in the past, on account of cheapness, to secure water from streams already evertaxed, while an abundance of water was going to waste in a large stream at hand, almost equally available for the land in question. To cause rights established for the use of water in these smaller streams to be abandoned, and water secured from the larger streams where available, so as to relieve the small streams as much as possible, has been productive of much good in this Division and saved expensive litigation. It is urgently urged that the late appropriators of water from Little Goose Creek should put forth extra efforts towards securing reservoir sites and constructing such reservoirs in the adjacent mountains, where many excellent natural sites for this purpose exist; sufficient to thoroughly irrigate the lands along said stream at present under ditches.

Regarding inter-state rights on water, attention is called to such streams, for example, as the Stockade Beaver Creek in eastern Wyoming. This stream heads in South Dakota and flows into Wyoming, where many farms are dependent on the waters of said stream. Should any one divert the waters in South Dakota so as to prevent same from flowing in its natural channel, the loss would be exceedingly severe on the settlers, and a gross injustice committed. Some inter-state action should be taken to regulate the use of water on streams where residents of two or more states are mutually dependent upon the water. Wyoming, however, as a general proposition, has a decided advantage in this respect, that most of the streams she depends upon for water have their source within her borders.

The certificates ordered by the Board of Control in this Division from permits granted by the State Engineer, have been uniformly satisfactory, not a single exception being taken or complaint made. The principle adopted of requiring those making proof to show the nature or extent of their interest in the ditch or canal through which the water is to be conveyed, has relieved the Board greatly from making awards of water largely beyond the capacity of said ownership in the ditch or canal. The size and grade of the canal being given, its capacity can be easily computed, and the value of each share known; water can then safely be awarded to the capacity determined. In the case of stock companies, each share of stock will represent water for a certain number of acres, and the number of shares owned by each appropriator determines the quantity of water he is entitled to receive. The number of shares owned representing practically the size of his ditch. As he has the utmost freedom in having this water adjudicated to such land as he sees fit, and knows that his partners in the ditch are required to furnish the same evidence and are given the same treatment, there is little opportunity given for a questionable award being made.

Numerous reservoirs have been constructed in this Division the past two years to re-inforce the waters of streams where a scarcity has been felt, and this means of securing a permanent and safe supply of water will be greatly enlarged upon in the immediate future. The magnificent resources of the adjacent Big Horn mountains for storage purposes have not been utilized up to the present time. It is safe to state that when the most natural reservoir sites of slight cost in construction are brought into use, the extent of the irrigated area in this Division can be easily doubled, and a more safe and satisfactory method of irrigation secured. Opportunities for the safe investment of capital in these reservoirs in the Big Horn mountains are unexcelled anywhere in the west. On Rock Creek the supply of water having been greatly reduced on account of forest fires destroying practically all the timber on the head waters of said stream, the appropriators of water have secured reservoir sites on South Piney Creek and are at present carrying on construction work there, which, when completed, will furnish the users of water on Rock Creek with a much greater supply of water than has ever been enjoyed before.

The careful handling of the water question in this Division for a few years, the use of good judgment in directing and aiding enterprises of the settlers in securing an economical and permanent supply of water, where rights at present are in a more or less precarious condition, will do much toward approaching perfection in the business of farming, lands will be greatly enhanced in value, and the foundation of our industrial progress be better insured.

The few streams in this Division where the adjudications have not been made, will, I believe, be soon completed. No matter how abundant the water may be, lands are more valuable which have water right certificates issued by the State. The question of securing loans or sale of property at enhanced figures is always assured where adjudications have been completed.

Respectfully submitted,
EDWARD GILLETTE,
Supt. Water Division No. 2.

REPORT OF CHARLES H. PRIEST, DIVISION NO. 4.

EVANSTON, WYO., NOV. 4, 1896.

ELWOOD MEAD,
President State Board of Control:

In compliance with your request I herewith submit the following report of Water Division No. 4.

Since my appointment in February, 1895, the adjudication of Salt River and its tributaries has been completed. There were some complaints made during the year 1895, owing to a scarcity of water and a misunderstanding as to priorities. Nearly all of these difficulties have been amicably adjusted, there having been no appeals taken to the Courts. During the year 1896 there has been an ample supply of water throughout my Division and the people have raised good crops of hay and the hardier varieties of grain. The adjudication of Black's Fork and tributaries was begun this spring and final report thereon will be made to the Board of Control at its next meeting.

I would recommend that the Legislature make an appropriation sufficient to enable the Board of Control to continue the adjudication of the streams of the State, as it can be done at less expense now than at any time in the future, and, furthermore, it will enable the owners of lands to make proofs on same and will enhance their values. Further delay in the adjudication of their water rights is a great injustice to those who have fully complied with all of the requirements of the law.

Yours respectfully,
CHARLES H. PRIEST,
Superintendent Water Div. No. 4.

NEEDS OF IRRIGATION.

NECESSITY FOR SUBSIDIES TO IMPORTANT CANALS. INCREASED DUTIES OF ENGINEER'S OFFICE, AND REASONS FOR INCREASE OF WORKING FORCE AND LARGER APPROPRIATIONS.

Two things must be had if we are to reclaim our best land and use our large rivers.

The first is state aid in building reservoirs and large canals.

The experience of every irrigated country has shown the necessity for state aid in building large works. Ditches and canals of reasonable cost can be profitably built by unaided private enterprise. The larger, costlier canals cannot. Sooner or later there comes a time when the state lends its aid or development stops. The Ganges canals in India; the Goulburn wier in Australia; the Cavour canal in Italy, are foreign examples of this necessity which might be indefinitely multiplied.

State aid or state encouragement, in arid America, has thus far taken two forms:

1st. Free grants of water. Speculative control of streams has prompted canal building where this is permitted.

2nd. Giving large land subsidies as is now being done in Mexico, or selling state land at a low price on condition that it be irrigated, as has been done in Colorado.

Wyoming can extend neither of these inducements. Speculative grants of water puts a perpetual mortgage on every irrigated home and should not be sanctioned. The State has no land to give away to canal companies, and none to sell at less than ten dollars an acre.

Some large canals have been a gift to the west by their builders. When reclamation began, many investors were ignorant and many promoters unscrupulous; as a result large and costly canals were built to water public land, but the parties who furnished the money to do this lost it. Investors now know more than they did and we need not expect this sort of philanthropy to continue. The Carey law brought with it better conditions than heretofore prevailed and will answer for all projects of medium cost, but several of the largest and, in some respects best, projects in the State cannot be carried out under existing conditions. One projected canal on the North Platte will illustrate this.

Goshen Hole, in south-eastern Wyoming, is an exceptionally fine body of irrigable land. It has a low elevation —4,000 to 4,500 feet above sea level. There is an ample water supply in the North Platte River. Surveys show that a canal can be built to reclaim nearly a quarter of a million acres, or more than was irrigated in the entire State in 1889. From the time the first furrow is turned on this project until its completion, the State would gain more than any individual. It would add largely to the population of Laramie County; give the capital city an adequate and assured support and practically double the taxable wealth of the State. It would transform untaxed, unproductive public land into improved, taxable State assets, and save one of our largest rivers from waste or appropriation elsewhere.

These benefits are not a matter of conjecture, they are demonstrated results, under less favorable conditions elsewhere. So far as the State is concerned, they are worth striving for. How is it from the investors' standpoint?

It will cost two million dollars to build the canal. It will require years of effort and large additional outlay to get settlers to use water and return this money by the purchase of shares in the canal. The capitalist who provides this money has not a dollar of security for his investment. He can get control of neither land nor water until both have been used.

He must make this immense outlay without a dollar's worth of property as security for its return. He has to take active charge and all the risk of development, while the State, without contributing a dollar, reaps the largest share of the gain. Can we anticipate that this will be done? I think not.

Green River furnishes an equally significant object lesson. Detailed surveys have shown that only a long and exceedingly expensive canal will cover the high bench lands west of the river, but with sufficient expenditure a canal can be built which will reclaim nearly two hundred thousand acres of land. The estimated cost is one and three-quarters millions, or nearly ten dollars an acre. The project would be of untold benefit to the State. The soil is fertile, the water supply abundant. The value of the land to settlers would be more than the cost of its irrigation, but the settlers must be had before either land or canal would be worth anything. It is the enormous sum of money which must be raised and expended which blocks its accomplishment and which will prevent carrying out all those of similar magnitude and cost until the State provides conditions which either lessen the present infinite risk or give reasonable hope of commensurate profit.

The people of this State and of other states have been deceiving themselves about the profits of canal building. It is time for us to look at the facts as they are and begin to devise adequate remedies. If we do not we must make up our minds to continue to undergo the stagnation which now so largely prevails.

The second need is an augmented appropriation, to pay for a more comprehensive and efficient enforcement of the State's water laws. To do this there must be a larger force in the Engineer's office to keep pace with the growth of irrigation, and funds to pay Division Superintendents for performing their increased duties.

The character of our irrigation makes the administration of Wyoming's water laws both expensive and difficult. Instead of a few large canals we have a multitude of small ditches. As a rule these are fed from creeks and rivulets having a fluctuating or inadequate supply, instead of the rivers whose perennial floods run to waste.

In the past six years the work of the State Engineer has quadrupled. It has been increased by the extension of irrigation and varied by legislation. In all this there has been no addition to the working force. As a result urgent work is falling in arrears, and duties, which by law are mandatory, can not be performed.

Every stream adjudicated adds to the duties and responsibility of the Division Superintendents. Since Wyoming's admission to statehood this increase has been rapid and continuous; yet there has been no increase in compensation. On the contrary, the appropriation for the past two years was only half that made for the first two after the law went into effect.

The water of our streams has a greater value than the lands which border them. The adjudication of titles thereto involves the performance of duties of the most complex and responsible nature. To this is added the supervision of its distribution from more than 600 streams, scattered throughout an area larger than the whole of New England. It requires six land offices, twelve officers and as many more clerks to attend to the disposal of Wyoming's public land. The combined salaries of the four Division Superintendents who, with the State Engineer, supervise the disposal and use of the State water supply, is less than that of a single land officer. Each of these Superintendents must make two trips each year to the State capital; must be ready at all times to visit any part of his Division. His expense allowance is $125.00 per year, and the average salary $500.00 per year.

Comment on the inadequate character of this compensation is not needed.

There is no saving in this to either the State or irrigators. Work which is not paid for will not be performed. It will have to be attended to in the future at increased cost.

The duties of the State Engineer are defined in Section 9 of Chapter 8, Session Laws of 1890-91. The entire section is quoted:

Sec. 9. The state engineer shall perform such duties as are prescribed in the law defining the duties of the board of control, and in addition, shall make, or cause to be made, measurements and calculations of the discharge of streams from which water shall be taken for beneficial purposes, commencing such work upon those streams as are most used for irrigation or other beneficial purposes. He shall collect facts and make surveys to determine the most suitable location for constructing works for utilizing the water of the State, and to ascertain the location of the lands best suited for irrigation. He shall examine reservoir sites and shall, in his reports, embody all the facts ascertained by such surveys and examinations, including, wherever practicable, estimates of the cost of proposed irrigation works, and of the improvement of reservoir sites. He shall become conversant with the waterways of the state, and the needs of the state as to irrigation matters, and in his reports to the governor he shall make such suggestions as to the amendment of existing laws, or the enactment of new laws, as his information and experience shall suggest, and he shall keep in his office full and proper records of his work, observations and calculations. All of which shall be the property of the state.

The first item in duties of the Engineer is supervising the recording and settlement of rights to water. He must examine all maps and plans filed with applications for permits to build ditches, reservoirs, etc. This alone furnishes continuous employment for either the Engineer or his assistant. The meetings of the Board of Control consume about two months of the year, while there yet remains the important feature of this part of the Engineer's duties, the surveys of ditches on streams to be adjudicated.

The holders of water rights acquired under territorial laws are urging their early adjudication. Until a determination of priorities has been had, rights to water can not be protected nor waste prevented. Appropriators also state that each year's delay renders it more difficult to secure competent evidence of the date when appropriations were made, and of the extent of these appropriations. Ditches and lands are being transferred in advance of the adjudications; the parties who had personal knowledge of the facts, on which a correct establishment of rights must rest, are leaving the country, and unless there is an early determination of these matters serious controversies or grave injustice threatens to result. The adjudication of these rights gives a stability and value to irrigated land that it cannot otherwise have; it assists in securing loans of money at reasonable rates and adds to the selling value of all this form of property.

As a result of all these influences petitions have been filed asking for the immediate survey of ditches taking water from the following streams:

Laramie River, North Laramie River, Sabille Creek, La Prele Creek, La Bonte Creek, Bed Tick Creek, Deer Creek, Elkhorn Creek, Sweetwater River, in Water Division No. 1; Cheyenne River and its numerous tributaries, and West Pass Creek, in Water Division No. 2; Owl Creek, Shell Creek and Grey Bull River, in Water Division No. 3; Little Gros Ventre Creek, Fish Creek and Slate Creek, in Water Division No. 4.

In some cases there have been half a dozen sets of petitions filed and the parties interested in an early settlement of these rights are becoming extremely impatient. The only reply which can be made is that work will be prosecuted as fast as the appropriations will permit. If the same rate of progress is made in the future that has been made during the past two years, it will require fully six years to complete the adjudication of these streams, but to maintain even this rate of progress it is necessary that all of the appropriation which can be spared from the clerical work of the Engineer's office must be exclusively devoted to the surveys and measurement of these ditches. These are only a fraction of the unsettled territorial rights. Before they can be disposed of, scores of other streams will require attention. In all, 1,670 permits under the State law have been issued. About one-third of the ditches built under these permits have been completed, and petition after petition has been forwarded to the Engineer's office asking for an examination of the ditches and irrigated lands and the issuance of a certificate of appropriation as by law provided.

If all of the unsettled rights, which accumulated under territorial laws, were disposed of it would require all of the time of the Engineer and his assistant to make the examinations and reports on rights being acquired under the State laws. As it is, the settlement of the territorial rights necessitates delay in the adjudication of State rights, as with territorial rights, promptness in their settlement is an important factor in securing a right settlement. Delay gives opportunity for illegal enlargement, for removal of witnesses, and for the inauguration of controversies. As it is now, the adjudication of old water rights is not keeping pace with the creation of new ones. We are not able to locate and map existing ditches, much less direct the proper location of those projected. At this rate of settlement, preparing maps for adjudication of water rights will alone absorb all the money which can be spared for field work and all the time of the Engineer and his assistants for the next twelve years. It is work which cannot be evaded and should not be delayed.

The Engineer is required to make measurements of the discharge of all streams, and to begin his work on those most used for irrigation. The necessity for such measurement is each year becoming more apparent, but there has never been any State money with which to do this, and, as has been explained in the previous portion of this report, the results secured in the past two years were obtained through the financial assistance of the U. S. Geological Survey.

The importance of the State determining the best location for constructing works for utilizing its water supply has been enormously enhanced by the law granting it one million acres of land. If independent investigations could be made which would show the location of the best tracts of irrigable land and give official information as to the cost of their reclamation, the construction of irrigation works by private parties would take a new and much more desirable phase than it has ever yet done.

The same is true in regard to investigation of reservoir sites. Not a month passes in which the State Engineer is not importuned to furnish information or to make investigation as to the possibility of storing surplus water on streams whose ordinary flow has been fully appropriated or over appropriated. No greater service could be rendered to the farmers of this State than to secure and place at their disposal this information. The possibilities of good in this direction can be best shown by an illustration from the experience of this office.

Rock Creek, a tributary of Clear Creek, in Water Division No. 2, is largely over appropriated. The destruction of the forests on the headwaters of this stream has resulted in a great diminution of the water supply, since the construction of ditches began, so that when the adjudication of rights was had it was manifest that there was little or no water for the later appropriators. The correctness of the Engineer's measurements was emphasized by the experience of the last ten years in which there has been repeated failure of crops. The holders of late priorities were obliged to do something to save their farms and considered two alternatives: litigation to prevent enforcing the order establishing priorities or building reservoirs to augment the water supply. Believing the latter course the best, the State Engineer contributed $200 to the expense of a survey to locate reservoir sites. It resulted in the discovery and subsequent improvement of three splendid reservoirs on the headwaters of Piney Creek, and the construction of a ditch to divert the waters thus stored into Rock Creek. These will provide an ample water supply for all users and put an end to a serious neighborhood controversy. All the irrigated land has thereby been rendered more valuable, while the area which can be safely farmed has been doubled. The results obtained here would be duplicated on many small streams if there could be a careful survey to discover and show to irrigators the best places to divert water and the location and size of basins to store the portion which now runs to waste.

We are in the formative period of our irrigation, the time when a knowledge of where ditches can be built to the best advantage is most needed. There will be no period in the future when this information will have the value it now possesses. Such surveys would not only be of immediate service in promoting our agricultural growth, but would tend to secure better works and greatly extend the ultimate area reclaimed. Nothing has been done in this direction and nothing can be done until increased revenue is provided to meet the expenses.

These statements are not made for the purpose of finding fault with the appropriations. It is believed that the State has appreciated the work done and has given as much money as the tax payers can afford. It is manifest that support for this work, like aid for canals and reservoirs, must come from some other source than taxes. It should come from the fifty million acres of public grazing land which this State contains. This land brings no revenue to the nation and never will so long as the present land laws prevail. Giving it to the State, therefore, involves no loss. The State should have the whole. It is the best solution of both the irrigation and range problems. This, however, involves a radical change in the land policy of the United States and may require some time for its accomplishment, although there can scarcely be any question as to the ultimate result if economic conditions are to receive proper consideration. What we need now, however, is emergency legislation, something that will give us immediate relief. If only ten per cent. of this grazing land could be given to the State to be leased to farmers and resident stockmen, the question as to how we are to administer our water laws and promote the construction of works most needed, would for the present be solved. Such a grant would not have sufficient magnitude to involve consideration of the larger problem, the future disposition of the arid public lands, but it would save the agriculture of the State from the evils which now seriously threaten it. There is every reason to believe that this 500,000 acres of land, if given to the State, could be leased at once, and it is believed that an average rental of two cents an acre could be secured. This would provide an income of $100,000 a year, a sufficient sum to locate and build many reservoirs or furnish sufficient aid to insure the construction of some of our large projected canals. It would pay the expenses of settling water rights and enable the State to bring the adjudication of these rights up to date within a reasonable period. It would lessen the burden of taxation and add to the property which helps pay these taxes.

Wyoming is entitled to this aid as a measure of justice. Every man who reclaims an acre of arid land is a benefactor, not only of the State but of the nation at large. He has to overcome obstacles not encountered by the pioneers of the humid states and make expenditures which render the claim of free land a delusion. If to this is added heavy taxes to pay for the administration of streams, the success of irrigation becomes problematical. The arid states ought to be aided in such manner as to reduce this burden, but not all of them have been. No candid mind can examine the land grants to the several states without realizing that Wyoming was seriously discriminated against in both the extent and value of the lands donated in the Act of Admission. Especially is this true in regard to aid for irrigation or other forms of internal improvement. Sixteen states each received 500,000 acres in aid of internal improvements; Wyoming got nothing. Utah was given 500,000 acres to aid in the construction of storage reservoirs; Wyoming did not receive a single acre. Many of the states which received grants of land, in aid of internal improvements, also received immense additional grants of swamp and overflowed lands. The five million acres of grazing land which this petition asks for has only a nominal value. The 500,000 acres granted for internal improvements in California, Illinois, Indiana, Iowa, Kansas, Nebraska, Wisconsin and many other states, were each worth more than *all* of the grazing lands of this State.

The following table shows the extent of the discrimination made against internal improvements in this State:

*TABLE SHOWING AREA OF LANDS DONATED TO STATES BY THE GRANT FOR INTERNAL IMPROVEMENTS, AND THE SALINE AND SWAMP LAND GRANTS.

State.	Internal Improvements.	Salt springs and contiguous lands.	Swamp and overflow lands (claims reported Dec. 31st, 1895.)†
	Acres.	Acres.	Acres.
Alabama	500,000.00	23,040.00	531,355.60
Arkansas	500,000.00	46,080,00	8,656,372.39
California	500,000.00	....	1,887,685.23
Colorado	500,000.00	46,080.00	....
Florida	500,000.00	....	22,244,541.07
Idaho	....	....	....
Illinois	500,000.00	121,029.00	3,981,784.10
Indiana	500,000.00	23,040.00	1,377,727.70
Iowa	500,000.00	46,080.00	4,570,132.33
Kansas	500,000.00	46,080.00	....
Louisiana	500,000.00	....	11,769,455.83
Michigan	500,000.00	46,080.00	7,293,159.28
Minnesota	500,000.00	46,080.00	4,738,549.78
Mississippi	500,000.00	....	3,603,921.68
Missouri	500,000.00	46,080.00	4,843,636.09
Montana	....	....	....
Nebraska	500,000.00	46,080.00	....
Nevada	500,000.00	....	....
North Dakota	....	....	....
Ohio	500,000.00	24,216.00	117,931.28
Oregon	500,000.00	46,080.00	434,428.45
South Dakota	....	....	....
Utah ‡	500,000.00	....	....
Washington	....	....	....
Wisconsin	500,000.00	....	4,569,712.12
Wyoming	....	....	....

The State should be given this land not because of its value, but because it is needed to provide conditions which will make agriculture in this State more successful; to put an end to the controversies over range rights which have prevailed for the past few years and which are a disgrace to a self-governing people, and to enable the State to carry out her water laws and create an irrigation system in which

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*State Grants of Public Lands—Tables. General Land Office, March 12, 1896.

†This swamp land grant is an indefinite grant, since it is of all the swamp and overflowed lands rendered thereby unfit for cultivation and remaining unsold at the date of the grant. The acreage given in this table represents the lands claimed up to this time; as there is no limit to the quantity the States may claim in the future, the true amounts granted can not be stated.

‡Water reservoirs.

both the State and nation can take just pride. The grant asked for will enable the State to do this without direct aid from the national government and will relieve the national treasury from the demands for appropriations which will otherwise become imperative.

ABSTRACT OF CERTIFICATES OF APPROPRIATION OF WATER,

ISSUED BY THE STATE BOARD OF CONTROL BETWEEN NOVEMBER 1, 1894, AND NOVEMBER 1, 1896.

WATER DIVISION No. 1.

Spring Creek, Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
42	Cherokee	S. L. Rhodes	2	219	Jan. 18, '91	Irrigation	2.07	145
42	"	James Deegan	"	"	" " "	"	3.36	235
42	"	Alex. McPhail	"	"	" " "	"	5.71	400
42	"	Erastus J. Fouts	"	"	" " "	"	2.28	160

Sand Creek, Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Spring Creek Nos. 1 and 2	James V. Cantlin	2	219	June '77	Irrigation & Domestic	.15	8
2	Birmingham	H. Chapman	"	"	Early '79	Irrigation	4.28	300
2	"	James V. Cantlin	"	"	" "	"	.57	40
3	Eva	" " "	"	"	Spring '81	"	1.43	100
4	Granger No. 2	Jane Granger	"	"	May '81	"	2.86	200
5	Garden	William Granger	"	"	June 10 '81	Irrigation & Domestic	.90	60
6	Birmingham, 2nd App'n	James V. Cantlin	"	"	Spring '82	Irrigation	3.43	240
7	Earnest No. 1	Boney and Frank Earnest	"	"	April '85	"	2.86	200
8	Granger No. 3	Jane Granger	"	"	June '85	"	.30	20
9	Muskrat	S. B. Perkins	"	"	" "	"	1.43	100

Sand Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
10	Birmingham, 3d App'n	James V. Cantlin	2	219	Spring '86	Irrigation	1.43	100
10	" " "	H. Chapman	"	"	" "	"	2.86	200
11	Granger No. 4	William Granger	"	"	Aug. 20 '86	"	.57	40
12	Turner No. 1	Wilson Turner	"	"	April '87	"	.86	60
13	Turner No. 2	" "	"	"	May '88	"	.30	20
14	Roberts No. 1	Eugene A. Roberts	"	"	June '89	Irrigation & Domestic	.60	40
14	Roberts No. 2	" " "	"	"	" "	Irrigation	.57	40

Horse Creek, Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
80	Lawrence Canal	G. H. Lawrence	2	223	Nov. 18 '91	Irrigation & Power	8.28	580

Little Laramie River, Albany County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
131	Hutton No. 1	E. A. Hutton	2	271	May 9 '93	Irrigation	2.28	160

Spring, Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Spring Ditch	James Deegan	2	245	Oct. 2 '94	Domestic	.50	

Grand Encampment Creek, Carbon County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
17	Wolford Grand Encampment	W. H. Wolford	2	247	Aug. 21 '91	Irrigation	2.28	160

Spring, Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	One-inch pipe line	J. L. and C. S. Thomas	2	249	Oct. 15 '94	Stock	.10	

Lodge Pole Creek, Laramie County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
45	Thomas Bros. No. 2	J. L. and C. S. Thomas	2	251	Mar. 26 '92	Irrigation	6.28	440
	Cotton Creek, Carbon County.							
19	Cotton Creek Ditch	D. T. Murray and Samuel Wagoner	2	253	Nov. 28 '93	Irrigation	2.28	160
	Horse Creek, Natrona County.							
1	Connor No. 1	Robert Taylor	2	259	April 15 '89	Irrigation	.43	30
1	Connor No. 2	" "	"	"	" " "	"	.28	20
2	Smith No. 1	A. J. Bothwell	"	"	June 19 '85	Irrigation & Domestic	2.80	190
2	Smith No. 2	" "	"	"	" " "	Irrigation	1.14	80
3	Omstead	J. H. Omstead	"	"	Dec. '88	Irrigation & Domestic	1.16	80
4	Connor No. 1, 2nd App'n	Robert Taylor	"	"	1890	Irrigation	.28	20
5	Wilson	H. H. Wilson	"	"	Oct. '91	"	1.14	80
6	Connor No. 3	Robert Taylor	"	"	Spring '95	"	1.50	105
6	Connor No. 4	" "	"	"	" "	"	1.07	75
6	Weaver	" "	"	"	" "	"	1.14	80
6	Healy	" "	"	"	" "	"	.43	30
	Cow Creek, Carbon County.							
29	Allsup	John Allsup	2	263	Oct. 10 '94	Irrigation	1.43	100

WATER DIVISION NO. 2.

Stockade Beaver Creek, Weston County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Smith & Freel	Henry F. Smith	2	151	Mar. 15 '82	Irrigation	1.14	80
1	" " "	Estate Jos. Freel	"	"	" " "	Irrigation & Domestic	.64	45
2	Allebach & Fawcett	Allebach & Fawcett	"	"	Spring '82	Irrigation	1.07	75
3	Sweet, Hanson & Davis	Thomas P. Sweet	"	"	" "	Irrigation, Stock	.30	20
4	McNiel, Davis & Hanson	Benj. F. Davis	"	"	Dec. 20, '82	Irrigation & Mill Power	.73	51
5	Hanson-Davis	" " "	"	"	May '84	Irrigation, Mill Power & Fish	.57	40
5	" "	F. E. Hanson	"	"	" "	Irrigation, Mill Power & Fish	.90	63
6	Garden	Benj. F. Davis	"	"	April 1 '85	Irrigation	.14	10
7	E. Beaver No. 1	Allerton & Spencer	"	"	Oct. 1 '85	"	1.43	100
8	E. Beaver No. 2	" "	"	"	June '86	"	10.71	750
8	E. Beaver No. 3	" "	"	"	" "	"	.14	10
8	E. Beaver No. 4	" "	"	"	" "	"	1 79	125
9	Thomson	Edward Thomson	"	"	Apr. 10 '87	"	.21	15
9	"	Daniel Thomson	"	"	" " "	"	.21	15
10	Stotts & Allison	J. L. Stotts	"	"	June 28 '87	Irrigation, Stock and Domestic	.57	40
10	" "	J. L. Allison	"	"	" " "	Irrigation, Stock and Domestic	.86	60
11	Allebach	Allerton & Spencer	"	"	Aug. '87	Irrigation	.43	30
12	Fawcett & Bedell	Chas. W. Bedell	"	"	May '88	"	.10	7
12	F. B Fawcett	F. B. Fawcett	"	"	" "	"	.36	25
12	Fawcett & Bedell	F. B. Fawcett	"	"	" "	"	.36	25
13	Thomson, 2nd App'n	Edward Thomson	"	"	Sept. 4 '88	"	.93	65

Stockade Beaver Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irri-gated
			Book	Page				
13	Thomson, 2d App'n	Daniel Thomson	2	151	Sept. 4 '88	Irrigation	.93	65
14	F. W. Coates	Fred W. Coates	"	"	Mar. '89	Irrigation & Domestic	.86	40
15	Sweet, Davis & Hanson	Benj. F. Davis	"	"	Apr. 1 '90	Irrigation	.57	40
15	" " " 2d App'n	Thomas P. Sweet	"	"	" " "	Irrigation, Stock	.86	60
16	Beaver	F. E. Hanson	"	"	Apr. 5 '90	Irrigation	.26	18
17	Wolzmuth	John Wolzmuth	"	"	Apr. 12 '90	Irrigation, Stock & Domestic	.57	40
18	Freel	Estate H. Freel	"	153	May 5 '90	Irrigation & Domestic	.43	30
18	"	Estate J. B. Freel	"	"	" " "	Irrigation	.36	25
18	"	Henry F. Smith	"	"	" " "	"	.43	30
19	E. V. A	John Wolzmuth	"	"	July 31 '91	"	.30	20
20	F. W. Coates, 2d App'n	Fred W. Coates	" "	" "	Sept. 7 '91	Irrigation & Domestic	.30	20

Skull Creek, Weston County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irri-gated
1	Hunter	Isaac Bergman	2	155	1881	Irrigation, Stock	1.00	70
1	"	Margaret Hunter	"	"	1881	" "	1.43	100
2	Bergman	Agnes W. Bergman	"	"	1882	Irrigation	3.43	240
3	Prairie	" " "	"	"	June 30 '84	"	.86	60
4	Holwell	Wm. E. Holwell	"	"	July 21 '86	Irrigation & Domestic	.43	30
5	Bock	Julius Bock	"	"	May 25 '88	Irrigation	4.28	300
6	Skull Creek	Colin Hunter	"	"	Mar. 20 '89	"	4.00	280
7	North Star	Robert Milne	"	"	Apr. 29 '89	"	.31	22
8	Northcote	John Northcote	"	"	Oct. '89	"	.08	6
9	Black Canon	Wm. Hunter	"	"	May 11 '93	"	.07	5

Tongue River, Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
15	Hanover	J. P. Robinson	2	167	July 6 '91	Irrigation	1.71	120
15	"	John F. Brenan	"	"	" " "	"	1.43	100
15	"	A. M. Carpenter	"	"	" " "	Irrigation	2.00	140
15	"	Lincoln Townsite Co., J. D. Helvey, Ag't	"	"	" " "	Domestic & Mechanical Irrigation	13.00 3 00	220
16*	Northern Wyo. Canal Co.	H. C. Alger	"	"	Oct. 10 '91	"		
17	High Line	H. L. Croghan			Nov. 9 '91	"	1.78	125
17	" "	D. A. Smith			" " "	"	.35	25
17	" "	Frank D. Grissell			" " "	"	.50	35
17	" "	Mrs. T. T. Howd			" " "	"	1.78	125
17	" "	Jas. A. Keirnes			" " "	"	.35	25
17	" "	Henry Baker			" " "	"	2.85	200
17	" "	Jos. Campbell			" " "	"	3.57	280
17	" "	J. D. & C. W. Thorn			" " "	"	2.85	200
17	" "	W. N. Robinson			" " "	"	2.85	200
18*	Huntington, 2d App'n	G. D. Frisbe			Jan. 26 '92	"		
19	Ellison	Samuel Ellison			1892	"	.69	48
20	York	Thos. E. Masters			June 6 '93	"	2.85	200
20	"	Geo. B Simpson			" " "	"	2.00	140
20	"	J. McPhillamy			" " "	"	1.14	80
20	"	E. A. Whitney			" " "	"	2.00	140
20	"	L. H. Brooks			" " "	"	2.57	180
20	"	Alf. Diefenderfer			" " "	"		
21*	Eisile	John C. Barr, et al	2	167	Mar. 29 '93	"		

* Permit issued. Time of construction not yet expired.

Tongue River—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acrse Irri-gated
22*	Huntington	Elizabeth M. Simpson	2	167	June 2 '93	Irrigation		
22	"	C. H. Ketcham, Jr.	"	"	Season '93	"	2.30	160
22	"	Mary A. Kireny	"	"	" "	"	2.00	140
23	Evans	Simon J. Evans	"	"	Sept. 20 '93	"	1.79	125
24	McCarthy	Patrick McCarthy	"	"	Season '93	"	1.50	105
24	Walker & Boyle	John W. Boyle	"	"	" "	"	1.00	70
24	" "	Mary J. Roland	"	"	" "	"	.39	27
25	Adams & Lord	Rollin L. Marohl	"	"	Jan. 8 '94	"		
28	Halifax	Mrs. Amanda McNutt	"	238	Dec. 12 '92	"	1.14	80

Bush Creek (Tributary Tongue River) Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acrse Irri-gated
1	Reservoir	Robt. C. Hays			Oct. 17 '92	Irrigation	.71	50

Twin Creek, Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acrse Irri-gated
1	Youkee No. 1	Adolph Youkee	2	165	Spring '85	Irrigation	1.43	30
1	Youkee No. 2	" "	"	"	" "	"	1.00	70
2	Cross	Chris Cross	"	"	May '86	"	1.71	120
2	Brittain	Wesley Brittain	"	"	" "	"	.571	40
2½	Last Chance	Peter Reynolds	"	"	Nov. 14 '89	"	1.714	120
3	Walsh	James K. Walsh	"	"	April '90	"	.64	45
3	Minnie Kosticott	Thurston W. Akin	"	"	" "	"	1.64	115
3	" "	Geo. F. Baker	"	"	" "	"	.93	65
4	Graham	J. H. & T. C. Graham	"	"	1892	"	.71	50
5	Walsh, 2d App'n	James K. Walsh	"	"	1894	"	.31	25

Muddy Gulch.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acrse Irri-gated
1	Muddy Gulch	J. H. & T. C. Graham	2	165	May 1 '89	Irrigation	.43 (Seepage)	30

* Permit issued. Time of construction not yet expired,

Big Goose Creek, Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
28	Big Goose and Beaver	Philip Kane	2	173	Aug. 29 '85	Irrigation	1.43	100
28	" " "	Joseph Morrow	"	"	" " "	"	.86	60
28	" " "	F. E. Wanderlich	"	"	" " "	"	.57	40
28	" " "	W. H. Hammontree	"	"	" " "	"	2.29	160
28	" " "	P. S. Morrow	"	"	" " "	"	.65	45
28	" " "	Samuel A. Iden	"	"	" " "	"	9.15	640
28	" " "	Isaac Zullig	"	"	" " "	"	.71	50
28	" " "	A. Miller	"	"	" " "	"	3.15	220
28	" " "	Cyrus Miller	"	"	" " "	"	1.71	120
28	" " "	Wm. Scarmellini	"	"	" " "	"	1.43	100
28	" " "	Alpheus Morrow	"	"	" " "	"	.65	45
28	" " "	C. C. Robinson	"	"	" " "	"	4.57	320
28	" " "	Edward Warnstaff	"	"	" " "	"	1.65	115
28	" " "	Hermann Timm	"	"	" " "	"	2.14	150
28	" " "	John Devier	"	"	" " "	"	2.29	160
28	" " "	Anthony Yetzer	"	"	" " "	"	.86	60
28	" " "	Stephen W. Hall	"	"	" " "	"	6.28	440
28	" " "	John A. Blake	"	"	" " "	"	2.00	140
28	" " "	Geo. W. Jeurich	"	"	" " "	"	3.42	240
28	" " "	Chas. H. Oser	"	"	" " "	"	2.85	200
28	" " "	Chas. H. Manning	"	"	" " "	"	.57	40
28	" " "	Truman D. Page	"	"	" " "	"	2.28	160
28	" " "	Frank Bradbury	"	175	" " "	"	2.28	160
28	" " "	Herman Otte	"	"	" " "	"	.71	50
28	" " "	Hiram B. Burgess	"	"	" " "	"	.85	60
28	" " "	Matilda A. Morrow	"	"	" " "	"	2.28	160
28	" " "	J. E. Findahl	"	"	" " "	Irrigation & Domestic	4.10	280

Big Goose Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
28	Big Goose and Beaver	John S. Addleman	2	175	Aug. 29 '85	Irrigation & Domestic	1.50	100
28	“ “ “	Helen Towers	“	“	“ “ “	Irrigation	2.85	200
28	“ “ “	W. B. Addleman	“	“	“ “ “	Irrigation & Domestic	4.28	300
28	“ “ “	Frank B. Curtis	“	“	“ “ “	Irrigation & Domestic	1.14	80
28	“ “ “	James H. Knight	“	“	“ “ “	Irrigation	9.14	640
28	“ “ “	Leon Lambrigger	“	“	“ “ “	Irrigation & Domestic	1.43	100
28	“ “ “	D. D. Loucks	“	“	“ “ “	Irrigation & Domestic	5.50	385
28	“ “ “	A. R. Hammontree	“	“	“ “ “	Irrigation	.57	40
28	“ “ “	H. D. Perkins	“	“	“ “ “	“	1.29	90
28	“ “ “	J. O. Willits	“	“	“ “ “	Irrigation & Domestic	1.26	88
28	“ “ “	A. A. Lambrigger	“	“	“ “ “	Irrigation	.30	20
28	“ “ “	John M. Croghan	“	“	“ “ “	“	1.14	80
28	“ “ “	Henry Townsend	“	“	“ “ “	“	1.14	80
28	“ “ “	F. A. DeClark	“	“	“ “ “	“	1.00	70
28	“ “ “	H. D. Perkins	“	“	“ “ “	“	1.43	100
28	“ “ “	T. D. Page	“	“	“ “ “	“	2.78	195
28	“ “ “	Eliza J. Reese	“	“	“ “ “	“	4.51	315
29	Beck's No. 8	Geo. T. Beck	“	“	Aug. '85	“	.42	30
30	Beaver Chief	Herman Timm	“	“	Summer'85	“	.85	60
30	“ “	Herman Otto	“	“	“ “	“	.71	50
30	“ “	Geo. W. Jeurich	“	“	“ “	“	1.14	80
30	“ “	Estate of Isaac Zullig	“	“	“ “	“	.36	25
31	Daisy, 2d App'n	James N. Works	“	“	Oct. 15 '85	“	2.57	180
32	Peralta	J. P. Robinson	“	“	Nov. 1 '85	“	4.28	300

Big Goose Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
32	Peralta	A. H. Wallop	2	175	Nov. 1 '85	Irrigation	4.57	320
32	“	J. W. Peterson	“	“	“ “ “	“	.71	50
32	“	W Spear & Sons	“	“	“ “ “	“	.57	40
32	“	C. F. Jackson	“	“	“ “ “	“	6.85	480
32	“	Hunter Smith	“	“	“ “ “	“	.71	50
32	“	Denis & Barr	“	“	“ “ “	“	7.42	520
32	“	Matthew Oser	“	“	“ “ “	“	4.57	320
32	“	R. H. & A. Darlington	“	“	“ “ “	“	2.28	160
32	“	A. & R. M. Darlington	“	“	“ “ “	“	1.14	80
32	“	W. J. Croghan	“	“	“ “ “	“	5.14	360
32	“	W. W. Nottingham	“	“	“ “ “	“	4.57	320
32	“	J. A. Wimmer	“	“	“ “ “	“	4.57	320
32	“	R. Cornwall	“	177	“ “ “	Irrigation &		
32						Domestic	3.00	200
32	“	P. L. McKee	“	“	“ “ “	Irrigation	.43	30
32	“	J. B. Menardi	“	“	“ “ “	“	.50	35
32	“	J. F. Brown	“	“	“ “ “	“	1.34	94
32	“	H. T. Darlington	“	“	“ “ “	“	2.21	155
32	“	Belle Nottingham	“	“	“ “ “	“	1.00	70
32	“	Edmund Hurlbut	“	“	“ “ “	“	.43	30
32	“	L. E. Martin	“	“	“ “ “	“	1.14	80
32	“	Helen Dow	“	“	“ “ “	“	1.51	105
32	“	Estate J. H. Sackett	“	“	“ “ “	“	1.07	75
33	Jeff Davis	Mrs. Catherine Henry	“	“	July '86	“	.35	25
34	Boulder	J. S. Snodgrass	“	“	Oct. '86	“	1.42	100
35	Beaver	C. H. Manning	“	“	1886	“	.14	10
36	Diamond	Philip Kane	“	“	Spring '87	“	3.57	250
37	Little Rapid	C. H. Manning	“	“	“ “	“	.57	40
37	Red Canon	Abel S. Heald	“	“	“ “	Irrigation, Stock	.10	1
37½	Patrick	Patrick Brothers	“	“	Aug. 17 '87	Irrigation	42.61	2,980

Big Goose Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
38	Goose Canon	Abram S. Heald	2	177	April 14 '88	Irrigation & Domestic	.50	25
39	Curtis & Russell	Curtis & Russell	“	“	April '88	Irrigation	1.14	80
40	Cole Younger	Catherine M. Henry	“	“	May 1 '88	“	.21	15
41	Rhodes	Rhodes Farm Co.	“	“	1888	Irrigation, Domestic, Town	1.00	40
42	Grinnell Live Stock Co. Big Goose Creek	Grinnell Live Stock Co.	“	“	Sept. 17 '90	Irrigation	14 28	1,000
43	Goose Canon, 2d App'n	T. N. Culbertson	“	“	1891	“	.71	50
44	Cross & Cruse & Last Chance	S. J. Jennings	“	“	April '92	“	1.71	120
44	“ “ “ “	Abraham Zullig	“	“	“ “	“	.57	40
44	“ “ “ “	John T. Lewis	“	“	“ “	Irrigation & Domestic.	.71	50
44	“ “ “ “	Theresa Gerdel	“	“	“ “	Irrigation	.57	40
44	“ “ “ “	Robt. F. Long	“	“	“ “	“	.71	50
44	“ “ “ “	Jas. H. Kemp	“	“	“ “	“	1.59	110
44	“ “ “ “	Estate J. H. Sackett	“	“	“ “	“	1.43	100
44	“ “ “ “	Peter H. Gerdel	“	“	“ “	Irrigation, Stock	1.71	120
44	“ “ “ “	John J. Wagner	“	“	“ “	Irrigation	2.86	300
44	“ “ “ “	John P. Harbison	“	“	“ “	“	.71	50
44	“ “ “ “	John W. Custis	“	“	“ “	“	.71	50
44	“ “ “ “	Michael B. Enos	“	“	“ “	“	1.31	90
44	“ “ “ “	Mary M. Reece	“	“	“ “	“	.30	20
44	“ “ “ “	Jas. K. Reece	“	“	“ “	“	.57	40
45	Alliance	Lewis C. Tidball			June 29 '91	“	2.31	162.5
45	“	Martin D. Shields			“ “ “	“	2.14	150
45	“	E. A. Whitney			“ “ “	“	1.43	100
45	“	Wm. Chubb			“ “ “	“	.71	50
45	“	R. Moline			“ “ “	“	1.17	82.5
45	“	A. S. Burrows			“ “ “	“	1 07	75

Big Goose Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
45	Alliance	Fred McDonough			June 29 '91	Irrigation	1.43	100
45	"	Andrew J. Nealsen			" " "	"	1.14	80
45	"	E. B. Viall			" " "	"	4.57	320
45	"	Jos. W. Allen			" " "	"	2.50	175
45	"	Larry Warren			" " "	"	1.14	80
45	"	Samuel P. Strang			" " "	"	2.10	147.5
45	"	H. B. Emmons			" " "	"	1.14	80
45	"	J. B. Kendrick			" " "	"	.71	50
45	"	C. E. Carpenter			" " "	"	1.00	70
45	"	R. D. Snodgrass			" " "	"	1.14	80
45	"	Geo. W. Downer			" " "	"	1.71	120
45	"	E. W. Scott			" " "	"	.71	50
46	Howd	T. T. Howd			Aug. 15 '92	Irrigation, Stock	1.10	70
47	Bedford	Sam'l & T. N. Culbertson			Feb. 1 '94	Irrigation	1.85	130

Clear Creek, Johnson and Sheridan Counties.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
1	Redmond Homestead	Manlius T. Redmond	2	184	May 1 '78	Irrigation	.38	27
2	Splasher	Cullen Watt	"	"	May '80	"	2.28	160
3	" 2d App'n	Chas. Carter	"	"	June 20 '81	"	.07	5
4	Hillyer & Onslow	Lobban & Hine	"	"	July 1 '81	"	6.93	485
5	Big Bonanza	N. E. Cramer	"	"	April 30 '82	"	7.43	520
6	Hart No. 4	Julia W. Hart	"	"	April 1 '83	"	2.00	140
6	" " "	Julia Hart Taylor	"	"	" " "	"		
6	" " "	Morton K. Hart	"	"	" " "	"		
6	" " "	Verling K. Hart	"	"	" " "	"		
7	Clear Creek Land & Ditch Co.	Elizabeth Montgomery	"	"	Spring '83	"	2.28	160
7	" " " " "	Robert Foote	"	"	" "	"	3.57	250
7	" " " " "	Andrew W. Kennedy	"	"	" "	"	1.07	75

Clear Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
7	Clear Creek Land & Ditch Co.	Mrs. Nellie Kennedy	2	184	Spring '83	Irrigation	2.28	160
7	“ “ “ “ “	Oliver J. Smythe	“	“	“ “	“	5.71	400
8	Carwile & Lobban	J. M. Lobban, C. W. Hines, C. W. White and R. A. Bennett	“	“	May 10 '83	“	1.45	102
8	“ “	Julius G. Oliver	“	“	“ “ “	“	1.10	77
8	“ “	Oren C. Kilkenny	“	“	“ “ “	“	.86	60
9	Hart No. 3	Julia H. Taylor, Morton K Hart and Verling K. Hart	“	“	Spring '83	“	1.14	80
10	LX	Murphy Cattle Co., limited	“	“	July '83	“	3.57	250
11	Big Bonanza, 2d App'n	Oscar Pheiffer and W. C. Copps	“	“	1883	“	14.28	1,000
12	Splasher, 3d App'n	Wm. H. Holland	“	“	Mar. 15 '84	“	1.00	70
12	“ “ “	Chas. Carter	“	“	“ “ “	“	.36	25
13	Redmond	M. T. and Rebecca Redmond	“	“	Mar. 20 '84	“	9.40	658
13	“	M. T. Redmond	“	“	“ “ “	“	4.86	340
13	“	Wm. H. Holland	“	“	“ “ “	“	2.36	165
13	“	Chas. Carter	“	“	“ “ “	“	.78	55
14	Four Lakes & French Creek Ditch & Flume Company	Geo. F. Myers	“	“	June 1 '84	“	2.86	200
14	“ “ “	Peter and Anna Gorgen	“	“	June 1 '84	“	5.26	368
14	“ “ “	Jos. Spechbacher	“	“	“ “ “	“	1.73	120
14	“ “ “	Genefeva Fisher	“	“	“ “ “	“	.43	40
14	“ “ “	Chas. H. Burritt	“	“	“ “ “	“	.86	60
14	“ “ “	R. S. Hopkins	“	“	“ “ “	“	14.28	1,000
14	“ “ “	Annie Holloway	“	“	“ “ “	“	1.14	80
14	“ “ “	Jas. A. Brown	“	“	“ “ “	“	1.73	120
14	“ “ “ & North Fork & French Creek	J. Norman Penrose	“	230	“ “ “	“	15.00	1,050
15	Pratt & Ferris No. 2	Pratt & Ferris Cattle Co.	“	184	Summer '84	“	10.71	750
15	“ “ “ “	“ “ “ “	“	“	“ “	“	21.43	1,500
16	Des Moines	Des Moines Cattle Co.	“	186	Sept. 15 '84	“	2.86	200

Clear Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
			Book	Page				
17	Crown	Julius G. Oliver	2	186	1884	Irrigation	2.28	160
17	Crown	E. E. and Jno. F. Adams	"	"	1884	"	3.43	240
17	"	John K. Spearing	"	"	"	"	2.28	160
17	"	E. D. Metcalf	"	"	"	"	1.14	80
18	Watt	Peter C. Watt	"	"	Nov. '84	"	2.86	200
19	Six Mile	Wyo. Land & Cattle Co.	"	"	Apr. 20 '85	"	7.14	500
20	Des Moines, 2d App'n	Des Moines Cattle Co.	"	"	June 1 '85	"	8.86	620
21	North Fork & French Creek	Alfred T. Bacon	"	"	Dec. 31 '85	"	.86	60
21	" " " "	Robert Foote	"	"	" " "	"	.86	60
21	" " " "	" "	"	"	" " "	"	1.43	100
21	" " " "	Church H. Cooke	"	"	" " "	"	1.78	125
22	Four Lakes & French Creek	Merlin J. Whaley	"	"	June 1 '86	"	1.86	130
23	North Fork & French Creek, 2d App'n	Alfred T. Bacon	"	"	Oct. 16 '86	"	2.56	180
24	Clear Creek Land & Ditch Co. 2d App'n	Robert Foote	"	"	May '87	"	5.00	350
25	Buffalo Mill Co.	Buffalo Mill Co.	"	"	June 1 '87	Milling	40.00	
26	North Fork & French Creek, 3d App'n	E. A. Whitney	"	"	Oct. 1 '89	Irrigation	4.28	300
26	North Fork and French Creek, 3d App'n	Annie Holloway	"	"	1889	"	2.28	160
27	Moore's	Wm. T. Moore	"	"	April 4 '93	"	1.14	80
31	Roberts	Geo. Roberts	"	236	May 4 '94	"	3.67	257

French Creek, Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
1	Sneider No. 1	Mary L. Carpenter	2	186	Mar. '79	Irrigation	.71	50
1	" " "	Julia Hart Taylor	"	"	" "	"		
1	" " "	Morton K. Hart	"	"	" "	"		
1	" " "	Verling K. Hart	"	"	" "	"	.93	60
2	Moeller No. 1	Alice S. Rapelyen	"	"	June '79	"	1.07	75
2	" " 2	" " "	"	"	" "	"	.50	35
3	" " 3	" " "	"	"	Apr. '83	"	4.28	300
4	John A. Fisher No. 1	John A. Fisher	"	"	May 10 '83	"	.50	35
4	John A. Fisher No. 2	" " "	"	"	" "	"	.43	30
4	Mahew & Gorgen	" " "	"	"	" "	"	.17	12
5	Dundee	Robert Foote	"	"	June 15 '83	"	1.00	70
6	Gorgen	Peter Gorgen	"	"	Oct. '83	"	.28	20
7	Sneider Ex. of Dundee	Mary L. Carpenter	"	188	1884	"	.57	40

NOTE.—Appropriators of water from Clear Creek who divert water into French Creek and claim the right to use the natural channel of French Creek as a part of their ditch system.

No certificates were issued to the following persons, as they elected to take their appropriations of water from Clear Creek.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
8	Four Lakes & French Creek Ditch & Flume Co.	Geo. F. Myers	2	188	June 1 '84	Irrigation	2.86	200
8	F. L. & F. C. " " "	Peter & Anna Gorgen	"	"	" " "	"	5.26	368
8	" " " " "	Jos. Spechbacher	"	"	" " "	"	1.73	120
8	" " " " "	Genefeva Fisher	"	"	" " "	"	.43	40
8	" " " " "	Chas. H. Burritt	"	"	" " "	"	.86	60
8	" " " " "	Richard S. Hopkins	"	"	" " "	"	14.28	1,000
8	" " " " "	Annie Holloway	"	"	" " "	"	1.14	80
8	" " " " "	Jas. A. Brown	"	"	" " "	"	1 73	120
9	North Fork and French Creek	Alfred T. Bacon	"	"	Dec. 31 '85	"	.86	60
9	" " " "	Robert Foote	"	"	" " "	"	.86	60

French Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
9	North Fork & French Creek	Robert Foote	2	188	Dec. 31 '85	Irrigation	1.43	100
9	" " " "	Church H. Cooke	"	"	" " "	"	1.78	125
10	Four Lakes & French Creek Ditch & Flume Co.	Merlin J. Whaley	"	"	June 1 '86	"	1.86	130
11	North Fork & French Creek, 2d App'n	Alfred T. Bacon	"	"	Oct. 16 '86	"	2.56	180
11	North Fork & French Creek, 3d App'n	E. A. Whitney	"	"	Oct. '89	"	4.28	300
11	North Fork & French Creek, 3d App'n	Annie Holloway	"	"	" "	"	1.14	80

Rock Creek, Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
1	Jennie Mowry	Andrew S. Brown	2	188	Apr. 1 '79	Irrigation	.36	25
2	Stanly	Munkers & Mathers	"	"	May 1 '79	"	.17	12
3	Pride of the Valley	Andrew S. Brown	"	"	July 10 '79	Irrigation & Domestic	1.43	100
4	Johnny Come' Early	John McRae	"	"	Mar. '80	Irrigation	1.86	130
5	Ono	Robert Foote	"	"	Apr. '80	"	1.14	80
5	"	Cullen Watt	"	"	" "	"	2.07	145
6	Lilly	Andrew S. Brown	"	"	May 1 '82	"	1.00	70
7	Kempton	Wm. H. Fenn	"	"	May 10 '82	"	.86	60
8	Jim Crow	Jas. R. Hutton	"	"	April 10 '83	"	.86	60
9	Steady Run	C. W. Rounds	"	"	" " "	"	.86	60
10	Sonnesberger	Thos. J. Haynes	"	"	June 1 '83	"	1.86	130
11	Prince Albert	Wm. H. Holland	"	190	June 10 '83	"	7.43	520
12	" "	Robert Foote	"	"	" " "	"	.11	8
12	Dee	" "	"	"	June 15 '83	"	.21	15
13	Yarwood	Henry Yarwood & Sons	"	"	Oct. 31 '83	"	2.86	200

Rock Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
14	Russell	John McRae	2	190	Nov. 1 '83	Irrigation	2.57	180
15	Pheasant	Jas. R. Hutton	“	“	18	“	.43	30
16	Mowry Basin	Warburton & Bryant	“	“	Oct. 20 '84	“	.14	10
16	“ “	J. S. Lincoln	“	“	“ “ “	“	1.00	70
17	Lake DeSmet	Munkers & Mathers	“	“	Oct. 31 '84	“	57.14	4,000
17	“ “	1st National Bank of Buffalo	“	“	“ “ “	“	9.14	640
17	“ “	W. J. Thom	“	“	“ “ “	“	29.14	2,040
17	“ “	Chas. F. Canterbury	“	“	“ “ “	“	7.43	520
17	“ “	John U. Barkey	“	“	“ “ “	“	8.28	580
17	“ “	Rachel Patch	“	“	“ “ “	“	1.00	70
17	“ “	S. A. Sturgis	“	“	“ “ “	“	4.28	300
17	“ “	I. N. Lane	“	“	“ “ “	“	1.43	100
17	“ “	Andrew S. Brown	“	“	“ “ “	“	.36	25
18	Last Chance	John K. Hardy	“	“	May 6 '85	“	1.71	120
18	“ “	J. B. Huggins	“	“	“ “ “	“	1.07	75
19	S. Fork Rock Creek	T. J. & Clara L. Haynes	“	“	May '85	“	1.64	115
20	Tay	Robert Foote	“	“	June 15 '85	“	.57	40
20	“	John Hill	“	“	“ “ “	“	.57	40
21	Prince Albert, 2d App'n	Lobban & Hine	“	“	June 1885	“	2.57	180
22	Lilly, 2d App'n	A. S. Brown	“	“	1885	“	2.43	170
22	Pride of the Valley, 2d App'n	“ “ “	“	“	1885	“	2.00	140
23	Hill	John Hill	“	“	April 9 '86	“	.71	50
24	Hallie	Jennie B. Buell	“	“	Apr. 10 '86	“	2.28	160
24	“	Ira C. Buell	“	“	“ “ “	“	2.28	160
24	“	Geo. A. Buell	“	“	“ “ “	“	3.43	240
24	“	Geo. P. Hersey	“	“	“ “ “	“	11.71	820
24	“	Georgia A. Hersey	“	“	“ “ “	“	.07	5
25	Rounder	Chas. W. Rounds	“	“	April 15 '86	“	1.00	70
26	Russell, 2d App'n	Chas. Fox	“	“	1886	“	1.07	75
27	Fenton	Wm. H. Fenn	“	“	May 27 '87	“	.17	12

Rock Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
28	Mowry Basin, 2d App'n	Cora Warburton	2	190	1887	Irrigation	.50	35
28	" " " "	Warburton & Bryant	"	"	"	"	2.53	177
28	" " " "	Jas. H. McDonald	"	"	"	"	.86	60
28	" " " "	Henry Wice	"	"	"	"	.57	40
29	Last Chance, 2d App'n	Chas. Fox	"	"	April 20 '88	"	1.07	75
30	Jenny Mowry	A. S. Brown	"	"	Aug. 6 '88	"	1.14	80

Sayles Creek, Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Sarah	J. N. Penrose	2	192	May 18 '81	Irrigation	.43	30
2	Sayles Creek	H. Yarwood & Sons	"	"	May 1 '82	"	.64	45
3	Sayles No. 1	Frank Sayles	"	"	Oct. '82	"	.43	30
4	Elbert	Lorena McDonald	"	"	Mar. 28 '84	"	.23	16
5	Sayles No. 2	Frank Sayles	"	"	April '84	"	.14	10
6	Elizabeth	Lorena McDonald	"	"	April 20 '85	"	.57	40
7	John	J. N. Penrose	"	"	May 1 '85	"	1.25	85
8	Sayles South Fork	Frank Sayles	"	"	May '85	"	.07	5
9	Sarah, 2d App'n	J. N. Penrose	"	"	1885	"	4.42	310

Shell Creek, Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Pioneeer	Chas. H. Burritt	2	192	April 1 '79	Irrigation	.86	60
2	Mountain	" " "	"	"	June 15 '80	"	3.92	275
3	Lower Shell Creek	John H. Sturgis	"	"	1883	"	.38	27
4	Spring	C. H. Burritt	"	"	July 1 '85	"	.36	25

Johnson Creek, Johnson County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Caleb	John McRae	2	192	Mar. 18 '80	Irrigation	.28	20
2	Johnson Creek Nos. 1 & 2	Robert Foote	"	"	1884	"	2.85	200

Piney Creek, Sheridan County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
1	Little Piney No. 2	C. J. Hepp	2	194	April '79	Irrigation	.11	8
2	Lower Phil Kearney	T. J. Foster	“	“	July '79	“	2.00	140
3	Prairie Dog Water Supply Co.	J. W. Kirkpatrick	“	“	Oct. 1 '80	Irrigation & Domestic	.71	50
3	“ “ “ “ “	Jas. Terrill	“	“	“ “ “	Irrigation	1.14	80
3	“ “ “ “ “	Jos. Harper	“	“	“ “ “	“	.43	30
3	“ “ “ “ “	J. H. Hopkins	“	“	“ “ “	“	.04	3
4	Big Piney No. 1	C. J. Hepp	“	“	May 5 '81	“	.36	25
5	Upper Phil Kearney	T. J. Foster	“	“	May 15 '81	“	4.93	345
5	“ “ “	Josef Leitner	“	“	“ “ “	“	.21	15
6	Mill Co. & Mill Race	C. W. Heine & Co.	“	“	Spring '81	Milling	37.30	
7	Sturgis	Wm. J. Sturgis	“	“	June 1 '81	Irrigation	2.86	200
8	W. J. D.	Samuel Dickey	“	“	April '82	“	1.71	120
8	W. J. D.	David Jackins	“	“	“ “	“	1.71	120
8	W. J. D.	Allen Williams	“	“	“ “	“	.36	25
9	Dunlap	J. H. Dunlap	“	“	June '82	“	2.14	150
9	“	Cullen Watt	“	“	“ “	“	6.71	470
10	Seuff	Pauline Seuff	“	“	July 15 '83	“	3.14	220
11	Lower Harvey	W. W. Harvey	“	“	July '83	“	.11	8
12	Lower Flying E	Murphy Cattle Co.	“	“	Sept. 15 '83	“	4.29	300
12	“ “ “	Robert L. Nix	“	“	“ “ “	“	1 43	100
13	Bouncer	Allen Williams	“	“	Sept. '83	“	2.14	150
14	Athorpe	Darius Athorpe	“	“	April '84	“	1.79	125
14	Dalton	J. H. Hopkins	“	“	“ “	“	1.07	75
15	Prairie Dog W. S. Co. 2d App'n	A. H. Robinson	“	“	May 1 '84	“	1.43	100
15	“ “ “ “ “	Estate of T. M. Cotton	“	“	“ “ “	“	5.14	360
15	“ “ “ “ “	O. Nelson and M. A. Newell	“	“	“ “ “	“	.64	45
15	“ “ “ “ “	Clara Perkins	“	“	“ “ “	“	1.19	83
15	“ “ “ “ “	Horatio Burnes	“	“	“ “ “	“	1.95	136.4
15	“ “ “ “ “	Daniel Harris	“	“	“ “ “	“	1.00	70

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
15	Prairie Dog W. S. Co. 2d App'n	A. Bishop, Sr	2	194	May 1 '84	Irrigation & Domestic	2.14	150
15	" " " " "	H. S. Robertson	"	"	" " "	Irrigation	1.43	100.6
15	" " " " "	V. V. Scrutchfield	"	"	" " "	"	1.43	100
15	" " " " "	J. M. Calloway	"	"	" " "	Irrigation & Domestic	1.27	89
15	" " " " "	F. H. Weltner	"	"	" " "	Irrigation	1.79	125
15	" " " " "	Stephen George	"	"	" " "	"	2.50	175
15	" " " " "	Jos. Harper	"	"	" " "	"	1.00	70
15	" " " " "	J. W. Kirkpatrick	"	"	" " "	Irrigation & Domestic	.71	50
15	" " " " "	Jas. Terrill	"	"	" " "	Irrigation	.29	20
15	" " " " "	J. H. Hopkins	"	"	" " "	"	4.96	347
15	" " " " "	Matt and C. H. Oser	"	"	" " "	"	1.29	90
15	" " " " "	Chas. P. P. Story	"	"	" " "	"	.36	25
15	" " " " "	Jas. Kirkpatrick, Sr	"	196	" " "	Irrigation & Domestic	.50	35
15	" " " " "	W. J. Stover	"	"	" " "	Irrigation	.29	20
15	" " " " "	Jas. Carroll	"	"	" " "	"	.57	40
15	" " " " "	Thos. A. Stout	"	"	" " "	"	.86	60
15	" " " " "	C. Boulware	"	"	" " "	"	3.24	226.4
15	" " " " "	C. W. Garbutt	"	"	" " "	"	.43	30
15	" " " " "	Allen L. Willey	"	"	" " "	"	.36	25
15	" " " " "	Jas. Burns	"	"	" " "	"	.43	30
15	" " " " "	W. A. Roberts	"	"	" " "	"	.36	25
15	" " " " "	M. L. Sawin	"	"	" " "	"	.36	25
15	" " " " "	Chas. George	"	"	" " "	"	1.14	80
15	" " " " "	Andy Downs	"	"	" " "	"	.43	30
15	" " " " "	E. M. Weltner	"	"	" " "	"	2.86	200
15	" " " " "	John C. Weltner	"	"	" " "	"	2.86	200

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
15	Prairie Dog W. S. Co. 2d App'n	Jas. Thurmond	2	196	May 1 '84	Irrigation	.50	35
15	" " " " "	Geo. W. Hardin	"	"	" " "	"	.07	5
15	" " " " "	C. B. Stroud	"	"	" " "	"	.21	15
15	" " " " "	T. A. Stout	"	"	" " "	"	.29	20
15	" " " " "	John Rose	"	"	" " "	Irrigation & Domestic	.07	5
15	" " " " "	John F. Kirkpatrick	"	"	" " "	Irrigation	.06	4
15	Steinbach	Helena Mayer	"	"	" " "	"	1.43	100
16	Hepp No. 1	John G. Hepp	"	"	May 2 '84	"	.71	50
17	Mead Creek or Coffeen	H. A. Coffeen	"	"	May 7 '84	"	10.71	750
17	" " "	Mary Terrill	"	"	" " "	"	1.14	80
17	" " "	James Terrill	"	"	" " "	"	5.71	400
17	" " "	Pulaski Calvert	"	"	" " "	"	1.21	85
17	" " "	W. O. Goodhue	"	"	" " "	"	.36	25
17	" " "	Geo. C. Moose	"	"	" " "	"	2.00	140
17	" " "	Emma C. Toland	"	"	" " "	"	2.00	140
18	Sturdevant	Hiram Sturdevant	"	"	May 26 '84	"	1.43	100
19	Leitner	Josef Leitner	"	"	May '84	"	.50	35
20	J. A. Spring	" "	"	"	" "	"	.07	5
21	Pratt & Ferris No. 1	Pratt & Ferris Cattle Co.	"	"	July '84	"	12.86	900
22	Lower Harvey, 2d App'n	W. W. Harvey	"	"	1884	"	1.00	70
23	Hepp or Island	Jno. G. Hepp	"	"	May 10 '85	"	.09	6
24	Mueller & Leitner	Rudolph Mueller	"	"	May 15 '85	"	.19	13
24	" "	Jno. Leitner	"	"	" " "	"	.86	60
25	Sollars Bros. South Side	W. H. Sollars	"	"	June '85	"	.64	45
25	" " " "	J. J. Sollars	"	"	" "	"	.14	10
25	" " " "	Leonora Sollars	"	"	" "	"	.23	16
26	Piney & Cruse, 1st App'n	Geo. J. Harper	"	198	July 20 '85	"	.64	45
26	" " "	E. Hollingsworth	"	"	" " "	"	1.00	70
26	" " "	Andrew Harper	"	"	" " "	"	.71	50

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
			Book	Page				
26	Piney & Cruse, 1st App'n	D. J. Larison	2	198	July 20 '85	Irrigation	.86	60
26	" " "	Geo. C. Moose	"	"	" " "	"	1 00	70
26	" " "	W. F. Brittain	"	"	" " "	"	.57	40
26	" " "	M. Heutsonpiller	"	"	" " "	"	.53	37
26	" " "	Rebecca Orr	"	"	" " "	"	.57	40
26	" " "	Robt. J. Payne	"	"	" " "	Irrigation, Stock & Domestic	.01	1
26	" " "	H. Sollenbach	"	"	" " "	Irrigation	.86	60
26	" " "	Dell M. Ray	"	"	" " "	"	.29	20
26	" " "	H. Hollingsworth	"	"	" " "	"	.57	40
26	" " "	C. W. Stroud	"	"	" " "	"	.36	25
26	" " "	Perry Duncan	"	"	" " "	"	.14	10
26	" " "	Wm. Sherman	"	"	" " "	"	1.29	90
26	" " "	J. M. Burnside	"	"	" " "	"	.60	42
26	" " "	B. F. Perkins	"	"	" " "	"	.57	40
26	" " "	C. W. Bard	"	"	" " "	"	1.43	100
27	Prairie Dog W. S. Co., 3d App'n	J. W. Kirkpatrick	"	"	Aug. 3 '85	"	1.81	127
27	" " " " "	Jas. Terrill	"	"	" " "	"	1.71	120
27	" " " " "	J. H. Hopkins	"	"	" " "	"	4.29	300
27	" " " " "	A. H. Robinson	"	"	" " "	"	.36	25
27	" " " " "	Matt and C. H. Oser	"	"	" " "	"	1.86	130
27	" " " " "	Chas. P. P. Story	"	"	" " "	"	2.24	157.1
27	" " " " "	J. Kirkpatrick, Sr	"	"	" " "	"	.94	66
27	" " " " "	W. J. Stover	"	"	" " "	Irrigation & Domestic	1.26	88.4
27	" " " " "	Jas. Carroll	"	"	" " "	Irrigation	2.50	175
27	" " " " "	Thos. A. Stout	"	"	" " "	"	1.27	89
27	" " " " "	C. Boulware	"	"	" " "	Irrigation & Domestic	1.57	110
27	" " " " "	C. W. Garbutt	"	"	" " "	Irrigation	1.86	130

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
27	Prairie Dog W. S. Co., 3d App'n	A. L. Willey	2	198	Aug. 3 '85	Irrigation	2.33	163
27	" " " " "	Jas. Burns	"	"	" " "	"	3.40	238
27	" " " " "	W. A. Roberts	"	"	" " "	"	.79	55
27	" " " " "	M. L. Sawin	"	"	" " "	"	1.50	105
27	" " " " "	Chas. George	"	"	" " "	"	.78	54.4
27	" " " " "	Andy Downs	"	"	" " "	"	1.39	97.3
27	" " " " "	E. M. Weltner	"	"	" " "	"	1.79	125
27	" " " " "	J. C. Weltner	"	"	" " "	"	.39	27.2
27	" " " " "	J. C. Weltner	"	"	" " "	"	.47	32.7
27	" " " " "	Jas. Thurmond	"	"	" " "	"	.64	45
27	" " " " "	Geo. W. Hardin	"	"	" " "	"	1.30	91
27	" " " " "	C. B. Stroud	"	200	" " "	"	1.93	135
27	" " " " "	T A. Stout	"	"	" " "	"	1.86	130
27	" " " " "	John Rose	"	"	" " "	"	.64	45
27	" " " " "	J. F. Kirkpatrick	"	"	" " "	"	.37	26
27	" " " " "	S. P. Smith	"	"	" " "	"	.71	50
27	" " " " "	R. B. Robinson	"	"	" " "	"	1.65	115.4
27	" " " " "	Elmer Surenna	"	"	" " "	"	1 07	75
27	" " " " "	Fred F. Newcomer	"	"	" " "	"	1.29	90
27	" " " " "	C. W. Morey	"	"	" " "	"	4.84	339
27	" " " " "	Joseph Harper	"	"	" " "	"	1.29	90.2
27	" " " " "	Jno. W. Willey	"	"	" " "	"	1.29	90
27	" " " " "	J. Kirkpatrick	"	"	" " "	"	9.10	637
27	" " " " "	Andrew Harper	"	"	" " "	"	.36	25
27	" " " " "	Wm. O'Neal	"	"	" " "	"	1.21	85.2
27	" " " " "	Otto Hanschka	"	"	" " "	"	2.57	180
27	" " " " "	Geo. L. Smith	"	"	" " "	"	3 93	275
27	" " " " "	Cross Cattle Co.	"	"	" " "	"	1.77	124
28	Upper Flying E	Murphy Cattle Co.			May 1 '86	"	1.71	120
28	Piney Divide, 1st App'n	W. W. Harvey			" " "	"	.17	12

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
28	Piney Divide, 1st App'n	I. S. Brown	2	200	May 1 '86	Irrigation	.57	40
28	" " "	Theo. Kutcher	"	"	" " "	"	.86	60
28	" " "	C. J. Hepp	"	"	" " "	"	2.03	142
28	" " "	Jas. R. Babcock	"	"	" " "	"	.24	17
29	Belle of Bear Gulch	Rudolph Mueller	"	"	June 10 '86	"	.36	25
30	Steinbach, 2d App'n	Helena Mayer	"	"	1886	"	.86	60
30	,, "	J. J. Sollars	"	"	,,	"	.23	16
30	,, "	Leonora Sollars	"	"	,,	"	.14	10
31	Sonnamaker	G. A. Sonnamaker	"	"	May '87	"	.86	60
31	"	W. O. Goodhue	"	"	" "	"	.36	25
32	Upper Harvey	W. W. Harvey	"	"	June 1 '87	"	.37	26
33	Piney Divide, 2d App'n	W. W. Harvey	"	"	1887	"	.40	28
33	" " "	Mary J. Brown	"	"	"	"	1.50	105
33	" " "	Rudolph Mueller	"	"	"	"	.86	60
33	" " "	Jas. Babcock	"	"	"	"	1.61	113
33	" " "	Horace Brown	"	"	"	"	1.07	75
33	" " "	T. M. Dodge	"	"	"	"	1.57	110
33	" " "	Theo. Kutcher	"	"	"	"	.59	41
33	" " "	G. A. Sonnamaker	"	"	"	"	.50	35
33	" " "	Fred Hosburgh	"	"	"	"	1.14	80
33	" " "	Howard A. West	"	202	"	"	.14	10
33	" " "	C. B. Hosburgh	"	"	"	"	1.21	85
33	" " "	C. J. Hepp	"	"	"	"	3.57	250
33	" " "	F. W. Strickert	"	"	"	"	1.43	100
33	" " "	S. I. Brown	"	"	"	"	1.86	130
33	" " "	Gilbert H. Dodge	"	"	"	"	1.00	70
33	" " "	R. W. Fullerton	"	"	"	"	2.29	160
33	" " "	Moses Dodge	"	"	"	"	.58	40
34	Sollars Bros. North Side	W. H. Sollars	"	"	May 31 '88	"	.14	10
34	" " " "	J. J. Sollars	"	"	" " "	"	.17	12

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
35	Hepp No. 1, 2d App'n	John G. Hepp	2	202	June 1 '88	Irrigation	.58	40
36	Mueller (Miller)	Rudolph Mueller	“	“	Aug. 15 '88	“	.21	15
37	Bear Gulch (Buckingham)	J. H. Buckingham	“	“	May 1 '89	“	.43	30
38	Mueller & Leitner, 2d App'n	Alfred T. Bacon	“	“	May 15 '89	“	.03	2
38	“ “ “	Leitner	“	“	“ “ “	“	.58	40
39	Doyle	Alfred T. Bacon	“	“	Spring '89	“	.50	35
40	Sturdevant, 2d App'n	Hiram Sturdevant	“	“	1889	“	.86	60
40	Hamilton	L. D. Hamilton	“	“	“	“	.64	45
41	Sturdevant, 3d App'n	E. B. Williams	“	“	1890	“	.71	50
42	Mueller, 2d App'n	Rudolph Mueller	“	“	May '91	“	.07	5
43	K. Z.	W. J. Sturgis	“	“	Aug. '91	“	.43	30
43	K. Z.	T. J. Keesee	“	“	“ “	“	.50	35
44	Piney & Cruse, 2d App'n	Pulaski Calvert	“	“	1891	“	1.14	80
44	“ “ “	Geo. J. Harper	“	“	“	“	1.34	95
44	“ “ “	E. Hollingsworth	“	“	“	“	1.00	70
44	“ “ “	M. L. Holcomb	“	“	“	“	.86	60
44	“ “ “	“ “ “	“	“	“	“	.37	26
44	“ “ “	Andrew Harper	“	“	“	“	1.07	75
44	“ “ “	W. M. Babione	“	“	“	“	2.00	140
44	“ “ “	D. J. Larison	“	“	“	“	1.14	80
44	“ “ “	H. C. Wilson	“	“	“	“	2.29	160
44	“ “ “	Geo. C. Moose	“	“	“	“	2.21	155
44	“ “ “	Amy F. Hopkins	“	“	“	“	.71	50
44	“ “ “	W. F. Brittain	“	“	“	“	.93	65
44	“ “ “	M. Heutsonpiller	“	“	“	“	.47	33
44	“ “ “	Sidney P. Smith	“	“	“	“	.71	50
44	“ “ “	Rebecca Orr	“	“	“	“	.58	40
44	“ “ “	Mattie Starr	“	“	“	“	1.14	80
44	“ “ “	Robt. J. Payne	“	“	“	“	1.99	139
44	“ “ “	H. Sollenbach	“	“	“	“	1.14	80

Piney Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
44	Piney & Cruse, 2d App'n	Dell M. Ray	2	204	1891	Irrigation & Domestic	1.21	85
44	" " "	E. Hollingsworth	"	"	"	Irrigation	.43	30
44	" " "	C. W. Stroud	"	"	"	"	.14	10
44	" " "	J. F. Jenning	"	"	"	"	1.43	100
44	" " "	A. J. Edwards	"	"	"	"	1.00	70
44	" " "	Perry Surrena	"	"	"	"	1.71	120
44	" " "	P. T. Barnes	"	"	"	"	1.79	125
44	" " "	R. B. Robinson	"	"	"	"	1.14	80
44	" " "	Perry Duncan	"	"	"	"	1.57	110
44	" " "	J. M. Burnside	"	"	"	"	1.26	88
44	" " "	B. F. Perkins	"	"	"	"	4.43	310
44	" " "	C. W. Bard	"	"	"	"	.04	5
44	" " "	Frank J. Wood	"	"	"	"	1.14	80
44	" " "	Levi Wood	"	"	"	"	1.14	80
44	" " "	J. F. Robertson	"	"	"	"	3.14	220
44	" " "	Clinton D. Day	"	"	"	"	1.14	80
44	" " "	Matt and C. H. Oser	"	"	"	"	.58	40
45	Dunlap, 2d App'n	Cullen Watt	"	"	1893	"	1.86	130
46	Prairie Dog W. S. Co. 4th App'n	Geo. Surrena	"	"	1894	"	1.14	80
46	" " " " "	Wilbur King	"	"	"	"	1.00	70

Prairie Dog and Tributaries, Sheridan County.

1	Terrill's (Prairie Dog)	Jas. Terrill	2	204	1879	Irrigation & Domestic	.31	25
2	Hillberry No. 1 (Prairie Dog)	Matt and C. H. Oser	"	"	May 16 '80	Irrigation	1.00	70
3	Mead Creek Ditch (Mead Cr.)	Perry Duncan	"	"	1880	"	.11	8
4	Calloway (Mead Creek)	J. M. Calloway	"	"	April '81	"	.31	25
5	Pompey Cr. Ditch (Pompey Cr.)	E. Hollingsworth	"	"	1883	"	.14	10

Prairie Dog and Tributaries—*Continued.*

Priority No	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
			Book	Page				
6	Wilson & Symons (Prairie Dog)	Wm. Symons	2	204	Nov. '86	Irrigation	1.71	120
6	" " " "	Chas. Wilson	"	"	" "	"	1.87	131

East Pass Creek, Sheridan County.

Priority No	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
19	Jones	F. A. Jones	2	232	May '92	Irrigation	.86	60
19	"	Geo. C. LaPoint	"	"	" "	"	.30	20
19	"	C. W. Nash	"	"	" "	"	1.43	100
19	"	Cora C. Babcock	"	"	" "	"	2.00	140
19	"	S. J. Babcock	"	"	" "	"	.60	40
19	"	Wesley Brittain	"	"	" "	"	3.93	275
19	"	W. H. Carroll	"	"	" "	"	3.16	221
19	"	Al Page	"	"	" "	"	1.14	80
19	"	A. Cossitt	"	"	" "	"	1.00	70
19	"	Chris Olson	"	"	" "	"	2.43	100
20	Withington	P. S. Withington	"	"	" "	"	1.43	100
20	"	L. H. Withington	"	"	" "	"	.14	10

Spring, Sheridan County.

Priority No	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
1	McKee	P. L. McKee	2	242	July 5 '95	Irrigation & Domestic	.10	5

Porcupine Creek, Big Horn County.

Priority No	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
1	Fortunatus Pipe Line	The Fortunatus Mining and Milling Co	2	240	July 30 '92	Mining, Milling, Reducing and Amalgamating Ores		1,141.1

WATER DIVISION NO. 3.

Meadow Gulch, Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
9	Dickinson Ditches Nos. 1, 2, 3 and 4, and Reservoir	Eli Dickinson	2	144	Aug. 24 '92	Mining	.50	40

East Squaw Creek, Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
11	E. Squaw Creek Ditch	Jas. Lynch	2	220	Sept. 25 '93	Irrigation	.20	17.5

Big Popo Agie River, Fremont County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
52	Farlow	Chester D. Chrisman	2	226	Aug. 2 '95	Irrigation	.36	25
52	Chalmers & Fogg	" " "	"	228	" " "	"	.50	35

WATER DIVISION No. 4.

Salt River and Tributaries, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Henderson & Harmon	Wm. A. Harmon	2	114	May 1 '86	Irrigation	.6	40
1	“ “	Marion Henderson	“	“	“ “ “	“	.6	40
2	Child	Wm. A. Harmon	“	“	May 3 '86	“	1.3	90
3	Anglesey	Wm. Anglesey	“	“	May 8 '86	“	1.3	90
4	Salt River Canal	M. S. Moffett	“	“	June 1 '86	“	1.2	80
4	“ “ “	J. F. Brown	“	“	“ “ “	“	1.8	120
4	“ “ “	Jno. C. Dewey	“	“	“ “ “	“	.5	35
4	“ “ “	E. Sprague	“	“	“ “ “	“	.5	30
4	“ “ “	J. M. Wells	“	“	“ “ “	“	1.2	80
4	“ “ “	G. G. Campbell	“	“	“ “ “	“	.5	30
4	“ “ “	L. J. Toleman	“	“	“ “ “	“	2.1	145
4	“ “ “	Thomas Sprague	“	“	“ “ “	“	.6	40
4	“ “ “	Jas. M. Toleman	“	“	“ “ “	“	.6	40
4	“ “ “	Jno. P. Neber	“	“	“ “ “	“	1.2	75
4	“ “ “	Jos. Horricks	“	“	“ “ “	“	1.2	80
4	“ “ “	Emery Barrus	“	“	“ “ “	“	1.8	120
4	Kirkbride No. 1	Karen Chenney	“	“	“ “ “	“	.8	50
4	“ “ “	M. C. Rasmassen	“	“	“ “ “	“	.8	50
5	Henderson No. 1	Marion Henderson	“	“	May 15 '87	“	1.2	80
6	Jensen No. 1	Jas. Jensen Jr	“	“	June 15 '87	“	.9	60
7	Hoy & Stanlick	S. J. Higgins	“	“	July 4 '87	“	.3	15
7	“ “	Chas. Hoy	“	“	“ “ “	“	1.3	90
8	Morgan & Rawlins	Hugh E Morgan	“	“	Aug. 18 '87	“	1.2	80
9	McCombs'	A. C. McCombs	“	“	May 15 '88	“	2.0	140
9	“	Quince Kimball	“	“	“ “ “	“	.5	30
9	“	Alvin McCombs	“	“	“ “ “	“	1.3	90
9	Kirkbride No. 1	Jas. Kirkbride	“	“	“ “ “	“	7.3	510

Salt River and Tributaries—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
10	McBride	M. H. Porter	2	114	April 21 '89	Irrigation	.8	50
11	Hepworth	Quince K. Kimball	"	"	May 1 '89	"	.8	50
11	"	Jos. E. Hepworth	"	"	" " "	"	2.0	140
11	"	Jno. E. Hepworth	"	"	" " "	"	.9	60
11	Champion	Jno. J. Corbridge	"	"	" " "	"	2.3	160
11	"	Geo. Lemmons	"	"	" " "	"	1.2	80
11	"	Wm. E. Corbridge	"	"	" " "	"	2.3	160
11	P. Nelson	Peter J. Nelson	"	"	" " "	"	1.2	80
11	Hepworth	R. C. Louder	"	"	" " "	"	.6	40
12	Morgan & Rawlins	Wilford A. Hyde	"	"	May 15 '89	"	1.0	70
13	Nelson	Jos. H. Holbrook	"	"	May 25 '89	"	2.3	160
14	Salt River Canal	Nelson C. Allred	"	"	June 1 '89	"	.4	25
14	" " "	W. A. Hodges	"	116	" " "	"	.6	40
14	" " "	Alfred Anderson	"	"	June 15 '89	"	1.5	100
14	" " "	Carl Anderson	"	"	" " "	"	1.5	100
14	" " "	Elias Smith	"	"	June 25 '89	"	.9	65
14	" " "	Jno. Wangsguard	"	"	" " "	"	1.0	70
14	" " "	Frank Toleman	"	"	June 1 '90	"	1.3	90
14	" " "	Hyram T. Holland	"	"	" " "	"	.4	25
14	" " "	Ole A. Jensen	"	"	June 1 '91	"	1.5	100
14	" " "	W. J. Jensen	"	"	July 1 '92	"	.9	60
14	" " "	W. A. Child	"	"	June 25 '92	"	.3	15
15	Brice & Walton & Pine Grove	Bruce, Peterson & Co	"	"	June 9 '89	"	3.5	240
16	Hardscrabble	George Lemmons	"	"	June 15 '89	"	1.2	80
16	"	Mark Biglee	"	"	" " "	"	1.2	80
17	Anglesey	Jas. W. Nield	"	"	July 15 '89	"	1.2	80
18	Reed	Jos. Reed	"	"	May 10 '90	"	1.8	120
19	Hammond	John Reeves	"	"	June 10 '90	"	1.5	100
19	"	Jos. H. Holbrook	"	"	" " "	"	1.2	80
20	Holbrook	" " "	"	"	June 1 '90	"	2.3	160

Salt River and Tributaries—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
21	Kirkbride No. 1	Wm. A. Crouch	2	116	May 25 '91	Irrigation	.9	65
22	Child	G. M. Porter	"	"	June 1 '91	"	1.2	80
23	Christienson	M. Christienson	"	"	June 1 '92	"	.9	60
23	"	R. C. Louder	"	"	" " "	"	.6	40
24	Hoy and Stanlick	S. J. Higgins	"	"	May 15 '93	"	.6	40

Dry Creek, Uinta County.

1	Henderson	Samuel Henderson	2	118	April 26 '87	Irrigation	1.2	80
2	Hill Ditch Co.	Francis C. Mecham	"	"	May 12 '87	"	.9	60
2	" " "	N. W. Hill	"	"	" " "	"	1.2	75
2	" " "	R. G. Bowles	"	"	" " "	"	.9	65
2	Sessions	Jas. M. Sessions	"	"	" " "	"	1.2	80
3	Hardman	Geo. R. Hardman	"	"	July 15' 87	"	2.0	140
3	"	E. M. Latchie	"	"	" " "	"	.9	60
4	Henderson	Nels L. Larson	"	"	April 26 '88	"	.7	45
4	"	C. A. Johnson	"	"	" " "	"	1.5	100
5	Veigal & Stumpp	Carl Veigal	"	"	May 2 '88	"	.5	30
6	Perkins	J. H. Perkins	"	"	April 28 '89	"	.8	50
6	Perkins & Hardman	Geo. Hardman	"	"	" " "	"	.6	40
6	" "	Andrew Hokenson	"	"	" " "	"	.7	45
6	" "	A. M. Neilson	"	"	" " "	"	.6	40
7	Veigal & Stumpp	John Stumpp	"	"	May 2 '89	"	.5	35
8	Swanson & Oleson	Paul L. Oleson	"	"	May 15 '90	"	.9	60
9	Hill Ditch Co.	Thos. R. Wilson	"	"	June 20 '90	"	.4	20
10	Wilson	" " "	"	"	June 18 '90	"	.6	40
11	Coleman	J. W. Stoner	"	"	May 7 '92	"	.4	20
11	"	Geo. Coleman	"	"	" " "	"	1.0	70
12	Swanson & Oleson	Ole Swanson	"	"	Oct. 28 '92	"	.5	30

Dry Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
13	Swanson & Oleson	C. M. Johnson	2	118	Mar. 28 '93	Irrigation	.3	15
13	Perkins & Hardman	Peter Jensen	“	“	July 1 '94	“	.4	20

Cottonwood Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
1	Creger Ditch Co.	Chas. E. Gomm	2	120	Aug. 24 '87	Irrigation	1.8	120
1	“ “ “	A. H Standley	“	“	“ “ “	“	1.8	120
1	“ “ “	D. H. Creger	“	“	“ “ “	“	2.3	160
1	“ “ “	Floyd M. Creger	“	“	“ “ “	“	1.0	70
1	“ “ “	Alex Hardman	“	“	“ “ “	“	.8	50
2	Upper North Canal	S. V. Bowles	“	“	Sept. 25 '89	“	.9	60
3	Cottonwood South	Wm. Parsons	“	“	May 14 '88	“	2.0	140
3	“ “	W. J. Crook	“	“	“ “ “	“	1.3	90
3	“ “	H. K. Cranney	“	“	“ “ “	“	1.2	80
3	“ “	A. E. Cranney	“	“	“ “ “	“	1.2	80
3	“ “	F. P. Cranney	“	“	“ “ “	“	.8	50
3	“ “	Mary E. Mecham	“	“	“ “ “	“	1.2	80
3	“ “	Bruce, Peterson & Co.	“	“	“ “ “	“	1.2	80
3	“ “	F. W. Kingston	“	“	“ “ “	“	.9	60
3	“ “	Albert Taggart	“	“	“ “ “	“	.9	60
3	Upper North Canal	John Godfrey	“	“	June 1 '88	“	.6	40
3	Cottonwood South	Thos. Walton	“	“	May 14 '88	“	1.3	90
3	“ “	Chas. Wilks	“	“	“ “ “	“	.4	25
3	“ “	Ole Jensen	“	“	“ “ “	“	.3	20
4	Wilber	S. K. Wilber	“	“	May 17 '88	“	.5	30
4	“	D. M. Yeamans	“	“	“ “ “	“	1.2	80
4	“	J. H. Jenson	“	“	“ “ “	“	1.0	70
5	Schwab	Martin Schwab	“	“	May 15 '89	“	1.0	70
5	“	Carl H. Schwab	“	“	“ “ “	“	1.2	75

Cottonwood Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet persecond	Acres Irri-gated
			Book	Page				
6	Creger Ditch Co.	E. J. Swainston	2	120	June 1 '90	Irrigation	.9	60
7	Cottonwood South	David Allen	"	"	June 10 '91	"	.6	40
8	Creger Ditch Co.	Geo. Coleman	"	"	July 15 '92	"	.4	25
9	Wilber	S. K. Wilber	"	"	July 24 '93	"	.5	30
10	Creger Ditch Co.	A. H. Standley	"	"		"	.6	40

Stump Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet persecond	Acres Irri-gated
1	Welch	S. E. Emmitt	2	122	June 20 '86	Irrigation	1.5	100
1	"	Geo. W. Walton	"	"	" " "	"	2.3	160
1	"	J. O. Henrie	"	"	" " "	"	2.2	150
2	Allen	Peter Allen	"	"	June 1 '87	"	2.3	160
3	Davis	Geo. Davis	"	"	May 1 '88	"	2.3	160
4	Hyde	Herman Hyde	"	"	June 1 '88	"	1.5	100
4	"	A. C. Hyde	"	"	" " "	"	.9	60
5	Putnam	S. H. Putnam	"	"	June 1 '89	"	3.5	240
6	City	D. C. Wood	"	"	June 15 '89	"	.8	50
6	Wood	H. H. Harrison	"	"	" " "	"	1.2	80
6	"	S. A. Walton	"	"	" " "	"	.6	40
6	"	D. C. Wood	"	"	" " "	"	.3	20
7	Stump Creek	C. Corbridge	"	"	Sept. 5 '89	"	2.2	150
7	" "	Wm. Reeves	"	"	" " "	"	1.3	90
7	" "	J. H. Holbrook	"	"	" " "	"	1.9	130
8	Idaho Boundary Line	W. J. Harrison	"	"	July 15 '91	"	1.8	120
9	" " "	H. H. Harrison	"	"	July 15 '94	"	1.2	80

Crow Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Brown No. 2	J. F. Brown	2	120	April 26 '88	Irrigation	.6	40
2	Moffett	M. S. Moffett	"	"	May 1 '86	"	1.2	80
3	Wells	J. M. Wells	"	"	May 15 '86	"	.6	40
4	Crow Creek Canal	Benj. Hammond	"	"	May 5 '87	"	2.3	160
4	" " "	A. M. Harman	"	"	" " "	"	1.5	100
4	" " "	Chas. C. Leavitt	"	"	" " "	"	2.0	140
4	" " "	Mark Bigler	"	"	" " "	"	4.3	300
4	" " "	August Lemberg	"	"	" " "	"	1.2	80
5	Rodman	M. Henderson	"	"	Sept. 25 '87	"	.6	40
6	Slough	Mark Bigler	"	"	May 25 '88	"	1.2	80
7	Fairview Canal & Brown et al	O. R. Child	"	"	June 10 '88	"	1.5	100
7	Brown	L. Richardson	"	"	" " "	"	1.0	70
7	Campbell	G. G. Campbell	"	"	" " "	"	1.7	115
7	Brown	E. Brown	"	122	" " "	"	1.9	130
8	"	Sarah Brown	"	"	May 20 '89	"	.6	40
9	Fairview Canal	Jno. C. Dewey	"	124	Oct. 15 '89	"	1.2	80
10	Henderson	M. Henderson	"	"	Sept. 15 '90	"	2.3	160
11	Fairview Canal	Wm. J. Jensen	"	"	June 1 '92	"	.2	7
12	Henderson	E. Henderson	"	"	May 15 '93	"	1.8	120
13	Fairview Canal	P. Hood, Jr.	"	"	July 1 '93	"	.9	60
14	" "	Thos. Hood	"	"	" " "	"	.9	60
13	Henderson	Wm. J. Pryer	"	"	May 15 '94	"	.6	40

Strawberry Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
1	Hincks	W. B. Preston	2	124	June 21 '87	Irrigation	1.3	90
1	"	Andrew Hincks	"	"	" " "	"	1.2	80
1	"	Robert Mathie	"	"	" " "	"	.5	30
1	"	J. B. Mathie	"	"	" " "	"	.3	18
2	Beaver Dam	J. N. Moser	"	"	May 1 '88	"	1.2	80
2	" "	J. B. Thatcher	"	"	" " "	"	1.2	80
2	" "	C. G. Heines	"	"	" " "	"	1.2	80
3	Hemmert	Nels Hokenson	"	"	May 15 '88	"	1.2	80
3	"	Hoken Hokenson	"	"	June 15 '88	"	1.2	80
3	"	H. J. Hemmert	"	"	May 15 '88	"	2.3	160
4	Kimball	David Kimball	"	"	Oct. 6 '89	"	.9	60
4	"	C. M. Kimball	"	"	" " "	"	.6	60
5	Anderson & Kimball	N. Anderson	"	"	July 5 '90	"	.3	16
6	Grand Canal	A. F. Brecken	"	"	May 29 '91	"	.6	40
6	" "	Thos. Baxter	"	"	" " "	"	.6	40
6	" "	Geo. G. Weaver	"	"	" " "	"	1.2	80
6	" "	Roswell Dana	"	"	" " "	"	1.5	100
6	" "	J. W. Titenson	"	"	" " "	"	6	40
7	Neuenschwander	F. Neuenschwander	"	"	June 1 '91	"	1.2	80
8	Thatcher & Flickiger	Jno. Flickiger	"	"	Sept. 30 '91	"	1.8	120
8	" "	Nellie Thatcher	"	"	" " "	"	1.2	80
9	Wolfly & Luthi	Rudolph Wolfly	"	"	Oct. 3 '91	"	.8	50
9	" "	John Luthi	"	"	" " "	"	.5	35
10	Merritt	Geo. Merritt	"	"	Nov. 14 '91	"	.6	40
11	Clark	Maroni D. C. Clark	"	"	June 20 '92	"	1.2	80
12	Hincks	J. S. Nelson Jr.	"	"	June 1 '92	"	1.5	100

Swift Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
I	Afton Canal	Chas. D. Cazier	2	126	May 8 '86	Irrigation & Domestic	2.0	140
I	" "	Lucus Hale	"	"	" " "	Domestic	1.9	130
I	" "	W. H. Kennington	"	"	" " "	Irrigation & Domestic	1.8	120
I	" "	A. V. Call	"	"	" " "	Same	.2	7½
I	" "	M. Henderson	"	"	" " "	"	.1	3¼
I	" "	O. H. Eggleston	"	"	" " "	"	.2	7½
I	" "	Chester V. Call	"	"	" " "	"	.1	2½
I	" "	Jos. Call	"	"	" " "	"	.1	5
I	" "	A. R. Moffett	"	"	" " "	"	.1	2½
I	" "	E. F. Critchlow	"	"	" " "	"	.1	2½
I	" "	Ira Call	"	"	" " "	"	.1	2½
I	" "	C G. Cazier	"	"	" " "	"	.1	5
I	" "	Arthur Roberts	"	"	" " "	"	.1	3¼
I	" "	Jas. Sessions	"	"	" " "	"	.1	2½
I	" "	T. H. Roberts	"	"	" " "	"	.2	7½
I	" "	Thos. Yeamans	"	"	" " "	"	.1	3¾
I	" "	Mark Hurd	"	"	" " "	"	.2	7½
I	" "	T. K. Wooley	"	"	" " "	"	.1	2½
I	" "	A. F. Burton	"	"	" " "	"	.1	1¼
I	" "	W. W. Burton	"	"	" " "	"	.1	5
I	" "	M. C. Rasmussen	"	"	" " "	"	.1	5
I	" "	A. Hale	"	"	" " "	"	.1	2½
I	" "	A. B. Gardner	"	"	" " "	"	.1	2½
I	" "	John Wilks	"	"	" " "	"	.1	5
I	" "	C. Cook	"	"	" " "	"	.1	2½
I	" "	Lucius Hale	"	"	" " "	"	.1	5
I	" "	Enoch Venter	"	"	" " "	"	.1	2½
I	" "	Isaac Biglow	"	"	" " "	"	1.3	90

Swift Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
I	Afton Canal	C. G. Cazier	2	126	May 8 '86	Irrigation &		
I						Domestic	1.2	80
I	" "	A. V. Call	"	"	" " "	Same	1.3	90
I	" "	Harvey Dixon	"	"	" " "	"	2.3	160
I	" "	M. A. Banks	"	"	" " "	"	.I	2½
I	" "	John Astle	"	"	" " "	"	.I	2½
I	" "	T. H. Wild	"	"	" " "	"	.I	2½
I	" "	Hannah E. Nelson	"	"	" " "	"	.I	2½
I	" "	W. H. Kennington, Jr.	"	"	" " "	"	.2	10
I	" "	Sylvester Low	"	"	" " "	"	.I	5
I	" "	A. R. Kennington	"	"	" " "	"	.I	2½
I	" "	Jas. W. Nield	"	"	" " "	"	1.2	80
I	" "	John Nield	"	128	" " "	"	1.2	80
I	" "	Jos. L. Nield	"	"	" " "	"	1.2	80
I	" "	J. C. Paulson	"	"	" " "	"	.I	5
I	" "	P. W. Cook	"	"	" " "	"	.I	2½
I	" "	Geo. Waite	"	"	" " "	"	.I	5
I	" "	A. Hendrickson	"	"	" " "	"	.I	5
I	" "	C. C. Leavitt	"	"	" " "	"	.I	2½
I	" "	A. M. Neilson	"	"	" " "	"	.I	2½
I	" "	C. A. Eggleston	"	"	" " "	"	.I	5
I	" "	John D. Walker	"	"	" " "	"	.I	2½
I	" "	C. Kingston	"	"	" " "	"	.I	2½
2	Burton Nos. I and 2	C. Cooke	"	"	Sept. 15 '86	"	1.7	114
2	" " " "	W. W. Burton	"	"	Sept. I '86	"	2.3	160
2	Burton No. I	P. Jenson	"	"	April 15 '86	"	.I	2½
2	" " "	T. T. Nield	"	"	" " "	"	.I	2½
2	" " "	Enoch Venter	"	"	April 15 '88	"	.I	2½
2	" " "	Jos. Nield	"	"	April 10 '86	"	.I	2½
3	Bassett	D. E. Bassett	"	"	Oct. 15 '87	"	1.2	80

Swift Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
4	Flagstaff	Enoch Venter	2	128	Apr. 25 '88	Irrigation & Domestic	1.5	100
4	"	G. A. Dakin	"	"	" " "	Same	1.5	100
4	"	Lionel Farrell	"	"	" " "	"	1.3	90
5	North Canal	Christian Nelson	"	"	May 10 '88	"	.6	40
5	" "	E. M. Thurman	"	"	" " "	"	.8	56
5	" "	E. Hepworth	"	"	" " "	"	.8	50
5	" "	Jno. Astle	"	"	" " "	"	1.6	110
5	" "	Ole Peterson	"	"	" " "	"	1.0	70
5	" "	Jno. P. Peterson	"	"	" " "	"	.8	55
5	" "	Jas. Jensen, Sr.	"	"	" " "	"	.5	35
5	" "	Jens C. Jensen	"	"	" " "	"	.5	30
5	" "	Hans P. Nelson	"	"	" " "	"	.5	30
5	" "	Wm. Sant	"	"	" " "	"	.9	60
5	" "	H. J. Hanson	"	"	" " "	"	.5	35
5	" "	Jno. F. Astle	"	"	" " "	"	.1	70
5	" "	J. J. Jensen	"	"	" " "	"	.5	30
5	" "	Chas. Kingston	"	"	" " "	"	.8	50
5	" "	Jno. Mills	"	"	" " "	"	.5	35
5	" "	J. L. Merrill	"	"	" " "	"	.6	40
5	" "	L. C. Jensen	"	"	" " "	"	.2	10
6	Halling	Jens C. Jensen	"	"	June 1 '88	"	.5	30
6	"	L. J. Halling	"	"	" " "	"	1.5	100
6	"	Edmund Clark	"	"	" " "	"	1.8	120
6	"	B. L Gardner	"	130	" " "	"	1.2	80
6	"	Geo. Waite	"	"	" " "	"	.6	40
6	"	T. H. Wild	"	"	" " "	"	.8	50
6	"	Thos. T. Nield	"	"	" " "	"	.6	40
6	"	Thos. H. Roberts	"	"	" " "	"	.6	40
7	Moffett & Stewart	A. R. Moffett	"	"	Nov. 15 '88	"	2.0	140

Swift Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
			Book	Page				
7	Moffett & Stewart	Edward Blacker	2	130	Nov. 15 '88	Irrigation & Domestic	1.2	80
8	W. L. A.	H. Aldred, Jr.	"	"	May 15 '89	Same	2.0	140
8	W. L. A.	W. Longhurst	"	"	" " "	"	1.2	80
8	W. L. A.	Jno. Wilks	"	"	" " "	"	1.9	130
8	W. L. A.	A. J. Tayson	"	"	" " "	"	1.2	80
9	Welchman	A. R. Welchman	"	"	June 1 '89	"	.3	15
10	Gardner	A. Gardner	"	"	Oct. 11 '89	Mechanical	48.1	
11	Spring	Jas. Kofed	"	"	May 15 '90	Irrigation & Domestic	.6	40
11	"	Soren Jacobson	"	"	" " "	Same	.8	50
11	"	T. H. Wild	"	"	" " "	"	.2	12
12	Coisi	Archese Coisi	"	"	Aug. 22 '91	"	2.0	140
13	Temple Bench	A. Gardner	"	"	June 7 '93	"	.4	25
13	" "	Thos. Yeamans	"	"	" " "	"	.2	8

Willow Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
1	Turner	Richard Hincks	2	130	June 1 '90	Irrigation & Domestic	.8	50
1	"	Geo. T. Adams	"	"	" " "	Same	.8	50
1	"	W. A. Turner	"	"	" " "	"	.8	50
2	"	W. A. Turner	"	"	Sept. 25 '91	Mechanical	11.9	

Dry Canon Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation cubic feet per second	Acres Irrigated
1	Flickigar	Wm. Belzatt	2	130	June 25 '89	Irrigation & Domestic	.5	30
2	Sage Brush	Richard Hincks	"	"	Aug. 2 '92	Same	.3	15

Cedar Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Wright	J. S. Wright	2	132	May 1 '89	Irrigation & Domestic	1.2	80
1	"	Chas. E. Wright	"	"	" " "	Same	.9	60

Flat Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Pine	A. L. Vail	2	132	Mar. 27 '89	Irrigation & Domestic	.6	40
1	"	A. J. Vail	"	"	" " "	Same	.3	15

Nickle Springs Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	McFarland	Mary McFarland	2	132	June 1 '90	Irrigation & Domestic	.18	120

Birch Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Lee	Thos. W. Lee	2	132	Aug. 20 '90	Irrigation & Domestic	.6	40

Vail Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Dilia	B. B. Walton	2 "	132 "	June 25 '86	Irrigation & Domestic	1.5	100
2	Walton	S. A. Walton	"	"	Oct. 25 '87	Same	2.1	145
3	Welch	Jno. A. Welch	"	"	June 20 '88	"	.3	20

Hanson Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
1	Kingston	Chas. Kingston	2	132	June 1 '91	Irrigation & Domestic	.3	20

Tom's Canon Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Elkhorn	Jno. A. Welch	2	134	June 15 '89	Irrigation & Domestic	1.5	100
2	Johnson	S. T. Johnson	"	"	Oct. 15 '89	Same	1.3	90
3	Walton	W. A. Walton	"	"	June 1 '91	"	2.3	160

Harmon Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Harmon	Harmon, H. M.	2	134	May 15 '86	Irrigation & Domestic	.3	20

Spring Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
I	Campbell Nos. 1 and 2	Grant Campbell	2	134	June 1 '85	Irrigation & Domestic	1.2	80
II	" " " "	Ezra T. Campbell	"	"	" " "	Same	1.8	125

Campbell Springs, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Book	Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
1	Campbell Springs	C. F. Campbell	2	134	June 1 '87	Irrigation & Domestic	.3	15

Hurd Canon and Astle Springs, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
1	Astle	John Astle	2	136	April 15 '87	Domestic	.1	
		Jensen Creek, Uinta County.						
1	Jensen	Jas. Jensen, Sr.	2	136	July 1 '87	Irrigation & Domestic	.3	20
		Hepworth Springs, Uinta County.						
1	Hepworth	Edmond Hepworth	2	136	April 15 '87	Domestic	.1	
		Phillips Creek, Uinta County.						
1	Clark	A. B. Clark	2	136	May 15 '86	Irrigation & Domestic	.4	25
1	Phillips	Jno. C. Phillips	"	224	" " "	Irrigation	.18	12
		Mill Creek, Uinta County.						
1	Nelson	Jens Nelson	2	136	May 30 '86	Irrigation & Domestic	.6	40
		Bradshaw Springs, Uinta County.						
1	Hepworth	Jno. E. Hepworth	2	138	May 10 '89	Irrigation & Domestic	.1	6

Jensen Springs, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded Book	Where Recorded Page	Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
1	Jensen No. 2	Jas. Jensen, Jr.	2	138	June 15 '88	Irrigation & Domestic	.8	50
	Spring Branch, Uinta County.							
1	Reeves System	Jno. Reeves	2	138	June 15 '88	Irrigation & Domestic	3.5	240
	Henrie Springs, Uinta County.							
1	Henrie	J. O. Henrie	2	138	May 1 '94	Irrigation & Domestic	.2	10
	Stewart Creek, Uinta County.							
1	Stewart	J. Z. Stewart	2	138	May 15 '88	Irrigation & Domestic	4.6	320
	Fontenelle Creek, Uinta County.							
27	A. Pomeroy	Alfred Pomeroy	2	140	May 1 '91	Irrigation	.9	60

LaBarge Creek, Uinta County.

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irri-gated
			Book	Page				
1	Spring Creek	Robt. McIlvane	2	146	May 15 '78	Irrigation	.57	40
1	“ “	Wm. McGinnis	“	“	“ “ “	“	1.71	120
1	“ “	Jno. NcNish	“	“	“ “ “	“	2.85	200
2	Kutch	Tilford Kutch	“	148	Mar. 25 '79	“	1.43	100
3	Miller, Baker & Burdick	Henry H. Burdick	“	“	May 1 '79	“	.57	40
3	“ “ “	Dan'l R. Baker	“	“	“ “ “	“	1.43	100
3	“ “ “	N. S. Miller	“	“	“ “ “	“	.85	60
4	Miller No. 1	N. S. Miller	“	“	June 1 '80	“	2.85	200
4	“ “ “	Jens J. Condall	“	“	“ “ “	“	2.07	145
4	“ “ “	Jas. Mickleson	“	“	“ “ “	“	1.71	120
5	Miller No. 2	N. S. Miller	“	“	June 15 '82	“	.85	60
6	Alford	Robt. Anderson	“	“	May 13 '86	“	2.85	200
6	“	Mrs. Henry Hill	“	“	“ “ “	“	1.00	70
6	“	Jas. L. Bess	“	“	“ “ “	“	.57	40
6	“	S. H. Friend and S. E. Reel	“	“	“ “ “	“	10.28	720
7	Phillips & Reel	Hyrum Smith	“	“	Spring '86	“	5.14	360
8	McIlvane	Robt. McIlvane	“	“	April 15 '87	“	.36	25
9	Bess	Mrs. Henry Hill	“	“	Mar. 17 '89	“	.85	60
9	“	Jas. L. Bess	“	“	“ “ “	“	.85	40
9	Anderson & Bess	Jas. L. Bess	“	“	“ “ “	“	1.14	80
9	“ “	Robt. Anderson	“	“	“ “ “	“	1.14	80
10	Anderson	“ “	“	“	Apr. 1 '89	“	1.71	120
10	“	Jno. H. Anderson	“	“	“ “ “	“	2.00	140
11	Steed	Arthur A. Steed	“	“	May 1 '89	“	3.43	240
12	Phillips & Reel	Ralph M. Friend	“	“	July 6 '89	“	2.28	160
12	“ “	Alfred Davidson	“	“	“ “ “	“	8.57	600
12	“ “	A. H. Reel	“	“	“ “ “	“	5.14	360
12	“ “	Sarah E. Reel	“	“	“ “ “	“	2.28	160
13	LaBarge No. 3	A. H. Reel	“	“	Aug. 1 '89	“	4.57	320

LaBarge Creek—*Continued.*

Priority No.	NAME OF DITCH	NAME OF APPROPRIATOR	Where Recorded		Date of Priority	Use to Which Applied	Amount of Appropriation, cubic feet per second	Acres Irrigated
			Book	Page				
14	Spring Creek	Jas. Mickleson	2	148	May 1 '90	Irrigation	1.14	80
15	Bushnell	W. H. Bushnell	"	"	Oct. 1 '90	"	1.00	70
16	LaBarge No. 2	Sarah E. Reel	"	"	May 1 '91	"	6.85	480
17	Delaney	W. J. Delaney	"	"	May 20 '91	"	4.57	320
18	Whitman	Geo. Whitman	"	"	May 10 '92	"	.43	30
19	McIlvane	Robt. McIlvane	"	"	May 15 '93	"	2.00	140

APPROVED FORMS OF BLANKS

USED IN THE STATE ENGINEER'S OFFICE.

The forms which follow are those used by the State Engineer and Board of Control, in taking proof of appropriations of water under the provisions of the Territorial laws, and of making applications for permits to appropriate water and submitting proof of the same under State laws.

It is preferred that parties having use for these blanks should obtain them from local printing offices, but for the accommodation of those who are unable to secure them otherwise, they can be had from the State Engineer's office for ten cents each.

[Form 1.]

STATE OF WYOMING.

Proof of the Appropriation of Water.

(For Appropriations made prior to January 1st, 1891.)

From.., Division No.

State your name ....

1 Q. Post-office.

A. (One blank line.)

2 Q. State the use to which the water has been applied.

A. (Three lines.)

3 Q. State the means of diversion employed.

A. (One line.)

4 Q. If through a ditch state its name.

A. (One line.)

5 Q. [*a*] State the date of the survey of the ditch or other distributing works through which the water claimed is diverted. [*b*] The date when the construction of such ditch was begun and when completed.

A. [*a*] (Two lines.)

[*b*] (Two lines.)

6 Q. If any enlargements were made state the date when begun and the date when completed.

A. (Two blank lines.)

7 Q. State the dimensions of the ditch as originally constructed, and as enlarged, and if measured by the County Surveyor under the provisions of the Act of 1886, give the results of such measurements.

A. (Four blank lines.)

8 Q. State the name of person, association of persons or corporation who built the ditch or canal, and the name or names of its present owners.

A. (Four lines.)

9 Q. If water is claimed for irrigation, give the legal subdivisions of land owned or controlled by you for which an appropriation is claimed.

A. (Four lines.)

10 Q. State the nature of your title to the above described land, and if not owned by you give the name of the owner and the nature of the possessory right which you exercise.

A. (Five lines.)

11 Q. State the year when water was first used for irrigation or other beneficial purposes, and by whom.

A. (Two lines.)

12 Q. If for irrigation, give the number of acres watered the first year, giving the legal subdivisions on which used and, as near as may be, the acres irrigated in each subdivision.

A. (Three lines.)

13 Q. State the number of acres watered each subsequent year, and give the legal subdivisions on which the water was used, and as near as may be the acres irrigated in each legal subdivision.

A. (Eleven lines.)

14 Q. State the number of acres irrigated from said ditch in 189 , and give the legal subdivisions on which water was used, and as near as may be the acres irrigated in each legal subdivision.

A. (Six lines.)

15 Q. State the acreage said ditch is capable of watering, give the legal subdivisions of land which it can be made to irrigate, and state who owns said land.

A. (Four lines.)

16 Q. State your proportionate interest in said ditch.

A. (Three lines.)

(16) The plat prepared by the State Engineer is hereby accepted as showing correctly the location of the

...ditch and the land which can be irrigated therefrom.*

A. (One line.)

17 Q. When does your irrigation season begin and when does it end?

A. (Two lines.)

18 Q. If water is used for other purposes than irrigation, state the nature of such use and the time when such use began.

A. (Three lines.)

---

* In case there is objection to the official plat the parties objecting must, when giving proof, file a written statement of the reasons therefor, and must within thirty days file with the Division Superintendent a map of said ditch and irrigated lands, with affidavit of surveyor, giving date of survey, attached thereto.

19 Q. How much water is required for such purpose?
A. (Two lines.)
20 Q. During what months is the water used?
A. (Two lines.)
21 Q. Have you or any other claimant of said appropriation filed a claim to water in the office of the County Clerk? If so, give date of filing and the name of the party or parties interested in said claim.
A. (Two lines.)
22 Q. Have you had sufficient water each year since the use for which an appropriation is claimed began?
A. (One line.)
23 Q. If not, state the years of scarcity, the months when the supply was insufficient, and the reason of such scarcity.
A. (Four lines.)

Remarks: (Nine lines.)

Signed:

....

...., Wyo., ...189......

I hereby certify that the foregoing affidavit was read to the affiant in my presence before he signed his name thereto; that said affiant is to me personally known (or has been satisfactorily identified before me by ....), and that I verily believe him to be a credible person and the person he represents himself to be; and that this affidavit was subscribed and sworn to before me at.. on this...................................day of.......................................189......

....

Division Superintendent.

(Fourteen blank lines.)

[Endorsed]
Division No......... District No.............. From..
Name of Claimant..
Filed with me this .... day of ....189......

....

Superintendent.

Filed in this office this............................ day of ....189......

....

President Board of Control.

[CIRCULAR.]

....189......

M..

DEAR SIR:—Your attention is called to the enclosed blank form of Proof of Appropriation. It is the purpose of the law and also the desire of the Board of Control to make the adjudication of rights to the use of water as simple and inexpensive as possible. To this end it is suggested that you acquaint yourself fully with all the facts necessary to the establishment of your rights as an appropriator of water before the day set for submitting said testimony.

Your special attention is called to those questions relating to the date of appropriation, and use of water, and to the acreage of land irrigated and the description thereof.

By complying with this request you will facilitate the taking of testimony and will do much to secure the permanent settlement of these rights, by having them conform to the facts on which they rest.

Yours truly,

....

Division Superintendent.

[FORM 2.]

APPLICATION FOR A PERMIT TO DIVERT AND APPROPRIATE THE WATER OF THE STATE OF WYOMING.

Water Division No. .... District No.

I, ..., of ...., County of ...., State of ...., being duly sworn according to law, upon .... oath say:

1. The name of the applicant (1½ lines.)

2. The post-office address of the applicant is

3. The use to which the water is to be applied is (1½ lines.)

4. The name of the ditch or canal is (1½ lines.)

5. The source of the proposed appropriation is (1½ lines.)

6. The head-gate of the proposed ditch or canal is located (1½ lines) of section ...., township ...., range

7. The said ditch or canal is to be miles long and is to pass through the following land: (give route by courses and distances or by naming legal subdivisions crossed) (8 lines.)

8. The dimensions of said works are: (a) [At head-gate] Width on top (at water-line) feet; width on bottom feet; depth of water .... feet; grade .... feet per mile.

(b) Give dimensions at each point where reduced in size, stating miles from head-gate:

[At ....], width on top, (at water-line) .... feet; width on bottom feet; depth of water feet; grade feet per mile.

[At ....], width on top, (at water-line) .... feet; width on bottom feet; depth of water feet; grade feet per mile.

9. Describe the character of the proposed work, stating: 1st. The nature of material to be moved. 2d. Number and length of tunnels, if any. 3d. Amount of fluming, if any.

10. The estimated cost of said ditch is .... dollars.

11. The land to be irrigated has a total area of acres, described as follows: (Give estimated acreage in fractions of subdivisions) ....

(Sixteen blank lines.)

12. Construction will begin on proposed work on or before.., 189 .

13. The time required for the completion of ditches and other distributing works is..............year from..............................189 .

14. The time required to complete the application of water to beneficial use stated in this application is .... year from.., 189 .

15. A map of the proposed ditch or canal, prepared in accordance with Chapter 45, Session Laws of 1895, accompanies this application.

(Signed)..

THE STATE OF WYOMING, }
County of } ss.

I hereby certify that the foregoing was signed in my presence and sworn to by .... this .... day of......................................, 189 .

(Twenty-two blank lines.)

THE STATE OF WYOMING, }
State Engineer's Office. } ss.

This is to certify that I have examined the foregoing application and have returned the same without my approval for the following reasons: (3½ lines.)

Witness my hand this ....day of .... A. D. 189 .

State Engineer.

THE STATE OF WYOMING, }
State Engineer's Office. } ss.

This is to certify that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

Construction of proposed work shall begin within one year from date of approval.

The time for completing the work shall terminate on ...., 189 .

The time for completing the application of water to beneficial use shall terminate on.., 189 .

NOTE—The statements in the foregoing application must comply with the requirements of Chapter 45, Session Laws of 1895.

The amount of the appropriation shall be limited to one cubic foot per second of time for each seventy acres of land reclaimed on or before ……………………, 189 , and the additional volume used for …………………… purposes on or before said date.

Witness my hand this ……………………day of……………………, A. D. 189 .

……………………………………

State Engineer.

[Endorsed]

No. . Application for a Permit to Divert and Appropriate the Water of the State of Wyoming. Division No.…

District No.…………

THE STATE OF WYOMING, } ss.
State Engineer's Office. }

Filed for record on the ……………………day of ……………………, A. D. 189 , at … o'clock M., and duly recorded in Book ………of ……………………on Page…………

……………………………………

State Engineer.

[FORM 3.]

APPLICATION FOR A PERMIT TO DIVERT AND APPROPRIATE THE WATER OF THE STATE OF WYOMING.

Water Division No............ District No...

Enlargement of the

...., of..., County of ...., State of..., being duly sworn according to law, upon ....oath say :

1. The location and description of the ditch to be enlarged is as follows:

2. The head-gate is situated (1½ lines) of section , township.................................., range...................................

3. Said ditch is ....miles long and passes through the following lands (give legal subdivisions) the same being correctly shown on the map accompanying this application: (Three lines.)

4. The dimensions of said ditch are: Width on top............ feet; width on bottom .... feet; depth .... feet; grade ....feet per mile.

5. Said ditch now serves to irrigate the following described land: (Eight lines.)

6. The total area now irrigated from said ditch being ....acres.

7. Application is hereby made for permission to enlarge or extend the use of water through the above named and described ditch and to divert and appropriate the water of the State as follows:

1. The name of the applicant (1½ lines.)
2. The post-office address of the applicant (½ line.)
3. The use to which the water is to be applied is (1½ lines.)
4. The name of the ditch or canal is (½ line.)
5. *The source of the proposed appropriation is (2 lines.)
6. The said ditch or canal as enlarged is to be .... miles long and to pass through the following land (give sections, townships and ranges): (3½ lines.)

---

* If the proposed work is to be an extension of the original ditch, give the location of the head of the extension by courses and distances from the nearest government corner.

7. The dimensions of said ditch are to be: (*a*) [At head-gate] Width on top (at water-line) .... feet; width on bottom, ... feet; depth of water, ... feet; grade .... feet per mile.

(*b*) Give dimensions at each point where reduced in size, stating miles from head-gate: [At ....], width on top (at water-line) .... feet; width on bottom, feet; depth of water, ... feet; grade, ... feet per mile.

[At ....], width on top (at water-line) feet; width on bottom, ... feet; depth of water, feet; grade, ... feet per mile.

8. Describe the character of proposed work, stating: 1st. The nature of material to be moved. 2d. Number and length of tunnels, if any. 3d. Amount of fluming, if any. (Five lines.)

9. The estimated cost of said enlargement is dollars.

10. The following lands are proposed to be irrigated: (Give sections, parts of sections, townships and ranges) (Sixteen lines.)

11. Construction of the proposed enlargement or extension of the land to be irrigated will begin within one year from date of approval of this application.

12. The time for the completion of enlargement or extension is .... year from .... 189 .

13. The time required to complete the application of water to beneficial use stated in this application is year from .... 189 .

14. A map in duplicate, prepared in accordance with the provisions of Section 35 of the Water Laws accompanies this application.

(Signed) ....

THE STATE OF WYOMING, } ss.
County of .... }

I hereby certify that the foregoing application was signed in my presence and sworn to before me by .... this .... day of ...., 189 .

....

(Twenty-two blank lines.)

THE STATE OF WYOMING, } ss.
State Engineer's Office. }

This is to certify that I have examined the foregoing application and have returned the same without my approval for the following reasons: (3½ lines.)

Witness my hand this.................................day of ....
A. D. 189 .

State Engineer.

THE STATE OF WYOMING, } ss.
State Engineer's Office. }

This is to certify that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

Work will begin within one year from date of approval.

The time for completing construction shall terminate on ...., 189 .

The time for completing the appropriation of water for beneficial use shall terminate on..., 189 .

The amount of the appropriation shall be limited to one cubic foot per second of time for each seventy acres of land reclaimed on or before..., 189 , and the additional volume applied to .... purposes on or before said date.

Witness my hand this.....................................day of.......................................,
A. D. 189 .

....

State Engineer.

[Endorsed]

No............ Application for a Permit to Divert and Appropriate the Water of the State of Wyoming. Division No...........
District No..................

THE STATE OF WYOMING, } ss.
State Engineer's Office. }

Filed for record on the.....................................day of ....,
A. D. 189 , at o'clock M., and duly recorded in Book
.........of ....on Page..................

....

State Engineer.

[FORM 4.]

PERMIT NO.............

PROOF OF APPROPRIATION OF WATER.

(In accordance with the provisions of Chapter 8, Session Laws of Wyoming, 1890-91, and Amendment of 1895.)

From... Division No........... District No...............

1 Q. State your name.

A. (One blank line.)

2 Q. Post-office.

A. (One line.)

3 Q. Are you the original applicant for Permit No.

A. (One line.)

4 Q. If not, state the date of your securing an interest therein and the nature of your interest in the works constructed under such permit.

A. (Five lines.)

5 Q. When did construction of the .... ditch (or other distributing works described in said permit) begin?

A. (One line.)

6 Q. When was it completed?

A. (One line.)

7 Q. What are the dimensions of the ditch (or other distributing works) built under said permit?

A. (Three lines.)

8 Q. Give the legal subdivisions of land owned or controlled by you on which water has been used, and if an appropriation of water for irrigation is claimed, give the acreage which has been irrigated in each legal subdivision.

A. (Six lines.)

9 Q. Give the date when, under the terms of this permit, water was first beneficially used.

A. (Two lines.)

10 Q. If for irrigation, give the location and acreage irrigated the first year and the location and acreage irrigated each subsequent year to the present.

A. (Six lines.)

11 Q. What crops were grown on this land in 189 ? Give estimated acreage of each crop.

A. (Two lines.)

12 Q. During what months is water beneficially used?

A. (Two lines.)

13 Q. Give amount of your investment in the construction of ditch and laterals.

A. (One line.)

14 Q. Give estimated cost per acre of preparing land for irrigation.

A. (One blank line.)

15 Q. Does the map which accompanies this proof show correctly the size and location of diverting works and area of land where water was used?

A. (One line.)

THE STATE OF WYOMING, } ss.
County of.............................. }

I, ..., being first duly sworn, do depose and say that I have read the above and foregoing proof of appropriation of water; that I know the contents thereof; and that the facts therein stated are true.

In Witness Whereof, I have hereunto set my hand this ....day of.............................., A. D. 189 .

....

...., Wyo., ...189..........

I hereby certify that the foregoing affidavit was read to the affiant in my presence before he signed his name thereto; that said affiant is to me personally known (or has been satisfactorily identified before me by ....), and that I verily believe him to be a credible person and the person he represents himself to be; and that this affidavit was subscribed and sworn to before me at .... on this...day of..189..........

....

NOTE.—This proof is intended to be used only by parties making appropriations under permits issued in accordance with Chapter 8, Session Laws 1890-91,

The map referred to in paragraph 14 must show the entire work in the case of individual ditches. In the case of larger works only one map of the entire canal need be filed. Individual proof must, however, show ditch from point of diversion from main canal and all laterals on land reclaimed. Where the duplicate map filed in the State Engineer's office and returned to the applicant gives necessary details and shows accurately the location of completed work, it may be filed.

This proof should be carefully verified and acknowledged before a person authorized to administer oaths.

The map which accompanies this proof must be on tracing linen, be accurately drawn on a scale not less than two inches to the mile, and verified by the party making the measurements.

REPORT OF OFFICIAL EXAMINER.

(One full page of blank lines.)

I hereby certify that an official inspection and measurement of the (one line) and of the lands described in the foregoing proof of appropriation of water was made by .... on the .... day of ...., 189 , and that the results of such inspection are given in the foregoing report. In accordance therewith I hereby submit the following recommendation:

(Fourteen blank lines.)

....
Supt. Water Division No.......

[Endorsed]
Permit No................. Division No................. District No.................
From ....
Name of Appropriator...
Filed with me this .... day of ....189.......

....
Superintendent.
Filed in this office this........................ day of ....189.......

....
President Board of Control.

TABLE OF CONTENTS.

A

Abstract of certificates of appropriation 170
Acknowledgments 14
Adjudication of water rights 10, 12, 37
Advantages of Wyoming land law 20
Agricultural possibilities of Wyoming 17
Amendments to Carey Act 24
Amendments to State law 25
Analysis—Big Horn Hot Springs 138
Applications for permit to appropriate water 9
Approved projects under Carey Act 16
Approval of permits to appropriate water 62
Applications to lease land 140
Appropriations for State Engineer's office 160
Arid Land Law 17
Attorney General—letter of 56

B

Baird Smith—cited 60, 61
Big Muddy Creek 77
Big Horn Hot Springs 132
Big Goose Creek, appropriations from—Water Division No. 2 177
Big Popo Agie “ “ “ “ “ 3 197
Birch Creek, “ “ “ “ “ 4 209
Black's Fork Creek 78, 88, 115
Blank form of proof of appropriation of water 216
Blank form of application for permit to appropriate water 220
Blank form of application for enlargement 223
Blank form of proof of appropriation under permits 226
Bradshaw Springs, appropriations from, Water Division No. 4 211
Bush Creek “ “ “ “ “ 2 176

C

Campbell Springs, appropriations from—Water Division No. 4 210
Cedar Creek, “ “ “ “ “ 4 209
Clear “ “ “ “ “ “ 2 181
“ “ Water Division No. 2 67
Cow Creek, appropriations from—Water Division No. 1 172
Cotton Creek, “ “ “ “ “ 1 172
Cottonwood Creek “ “ “ “ “ 4 201
Crow Creek, “ “ “ “ “ 4 203
Current meters 87

D

Discharge diagram, Black's Fork Creek 91
" " Clear Creek 107
" " Green River 94
" " Laramie River (Wood's Landing) 98
" " " " (Uva) 100
" " North Platte River 103
" table, Big Goose Creek 111
" " Black's Fork Creek 92
" " Clear Creek 106
" " Green River 93
" " Laramie River (Wood's Landing) 99
" " " " (Uva) 101
" " North Platte River 104
Diagram showing daily discharge Big Goose Creek 119
" " " " Black's Fork Creek 124
" " " " Clear Creek 123
" " " " Green River 120
" " " " Laramie River 117
" " " " " " (Uva) 121
" " " " North Platte River 122
Donations of grazing lands recommended 166
Dry Creek, appropriations from—Water Division No. 4 200
Dry Canon Creek, " " " " " 4 208
Duty of water 42

E

East Pass Creek, appropriations from—Water Division No. 2 196
East Squaw Creek " " " " " 3 197
Engineer's duties, change in character of 8
European water rights, nature of 57
Examination of projected canals 13

F

Fees, Engineer's Office 9
Flat Creek, appropriations from—Water Division No. 4 209
Fontenelle Cr. " " " " " 4 212
Forest lands 29
French Creek, appropriations from—Water Division No. 2 184

G

Grand Encampment Creek, appropriations from—Water Div. No. 1 171
Grazing lands 30, 166
Green River 67

H

Hall's Irrigation Development—cited 58, 59
Ham's Fork—surveys 79
Hanson Creek, appropriations from—Water Division No. 4 210
Harmon Creek " " " " " 4 210
Henrie Springs " " " " " 4 212

Hepworth Springs, appropriations from—Water Division No. 4 211
Horse Creek “ “ “ “ “ 1 .... 171, 172
Horse Creek 71
Hurd Canon and Astle Springs, app'ns from, Water Division No. 4 211

I

Increased correspondence 7

J

Jensen Creek, appropriations from, Water Division No. 4 211
Jensen Springs, “ “ “ “ “ 4 212
Johnson Creek, “ “ “ “ “ 2 187

L

Land Laws for the Arid Region 28
LaBarge Creek, appropriations from—Water Division No. 4 213
Letter of Transmittal 4
List of Officers in Charge of the Public Waters of Wyoming 5
Little Goose Creek 45
Little Horse Creek 52
Little Muddy Creek 77

M

Medicine Bow River (Surveys) 81
Meadow Gulch, appropriations from—Water Division No. 3 197
Mill Creek, “ “ “ “ “ 4 211
Monuments on public surveys 127
Muddy Gulch, appropriations from—Water Division No. 2 176

N

Needs of Irrigation 158
Nickle Springs Creek, appropriations from—Water Division No. 4 209
Notes on Water Supply, Black's Fork, Creek 115
“ “ “ Big Goose Creek 108, 118
“ “ “ Clear Creek 105
“ “ “ Laramie River 97, 115
“ “ “ North Platte River 101
No Wood River (Surveys) 84

P

Pass Creek 52
Permits to appropriate water 9, 62, 69
Phillips Creek, appropriations from—Water Division No. 4 211
Piney Creek, “ “ “ “ “ 2 188
Piney Creek 54
Porcupine Creek, appropriations from—Water Division No. 2 196
Prairie Dog Creek, “ “ “ “ “ 2 196
Proposed amendments to State Law 25

R

Rattlesnake Creek 46
Report of J. A. Johnston, Sup't Water Division No. 1 146
“ “ Edward Gillette, Sup't Water Division No. 2 149
“ “ C. H. Priest, Sup't Water Division No. 4 156

Reservoir Surveys 164
Review of Work of State Engineer 7
Rock Creek, appropriations from—Water Division No. 2 185

S

Sand Creek 72
Sale of surplus water 45
Sand Creek, appropriations from —Water Division No. 1 170
Sayles Creek, " " " " " 2 187
Salt River and Tributaries, " " " " 4 198
Schuelke, Dr. J. A., statement of 34
Shell Creek, appropriations from—Water Division No. 2 187
Skull " " " " " " 2 174
Smith's Fork, Surveys 78
Spring Creek, appropriations from, Water Division No. 1 170, 171
Spring, " " " " " 1 171
Spring, " " " " " 2 196
Spring Branch, " " " " " 4 212
Spring Creek, " " " " " 4 210
State Board of Control 5
Stream Gaugings 8, 74
State Land Selections 13, 139
Stations for Stream Gaugings, 1895, list of 75
Stations for Stream Gaugings, 1896, list of 87
Stockade Beaver Creek, appropriations from, Water Division No. 2 173
Stump Creek, " " " " " 4 202
Strawberry Creek, " " " " " 4 204
Stewart Creek, " " " " " 4 212
Superintendents of Irrigation, List of 5
Surveys of streams and ditches 8, 71, 76
Summary of Certificates of Appropriations 11
Superintendents of Water Divisions, Letter to 69
Surveys of public land 126
Subsidies for irrigation works 158
Swift Creek, appropriations from, Water Division No. 4 205

T

Table showing maximum and minimum discharge in 1895 and 1896 112
Table giving total number of acre feet discharged in 1895 and 1896 113
Table showing land grants to states for internal improvements 168
Tongue River, appropriations from, Water Division No. 2 175
Tom's Canon Creek, " " " " " 4 210
Twin Creek, " " " " " 2 176

U

United States Geological Survey 8, 88, 129, 164

V

Vail Creek, appropriations from, Water Division No. 4 209

W

Water Commissioners, List of 5, 6
Water Rights, Rulings of the Board of Control 37, 40, 57
Willow Creek, appropriations from, Water Division No. 4 208

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